MONTHLY

JOURNAL OF AGRICULTURE.

VOL. III. JUNE, 1848. NO. 12.

ORIGIN AND PROGRESS OF OUR COTTON MANUFACTURES.

LIFE OF S. SLATER.

If, as we maintain, the welfare of society plainly suggests that he most deserves the public esteem and the rewards of a free Government, whose genius devises new and productive employments for labor, then should grateful testimonials be bestowed on such men as he whose life is briefly sketched in the following pages. The trio of great men to whom our country is indebted for countless millions of wealth, and very much of that development and growth which is without parallel elsewhere in the world, may be said, as far as these have resulted from *manufacturing power*, to consist of Eli Whitney, Cartwright, and Slater, the subject of the following notice. It gives us pleasure to preserve memoirs of such men, as well from an impulse of unaffected gratitude, as because we deem them entertaining and suitable reading for the sons of our friends in the country. And why not for their fathers? says the reader. Only because, for our life, we cannot divest ourselves of the idea, more than half the time, that we are writing for *young people*. Why, we hardly know; but so it is. We deem our space very precious, and endeavor so to fill it with useful things that we sometimes apprehend our pages may wear a sombre cast that may be almost forbidding. We shall take room for no farther preface than to ask the reader who here sees the rise and progress of the Cotton Manufacture in the United States, beginning at so late a period, to bear in mind that, for the *number of spindles*, the United States is already the third country in the world, England being the first and France the second. Of the 27,585,000 spindles of which we have accounts from all countries, England drives a 634-1000th part of them; the remainder of Europe 272-1000th parts, and the United States 91-1000ths. In 1846 the net gain to the labor of England, on her Cotton Manufacture, was about $70,000,000. We were going to ask if the same weight of Cotton were manufactured in this country, under free and easy associations of small capitalists, as in New-England, where the operative is often a stockholder of the establishment in which he works, how much more of these net profits would remain to the laborer, and how many of these seventy millions would be divided among our own cultivators of butter, and cheese, and milk, and onions, and apples, and potatoes, and beef, and mutton, and eggs, and chickens, and cabbages? But we have not space here to push these reflections. Yet, is it not

clear that if we had in all the old States *consumers alongside of the producers* in proportion to their extent and resources, as they have in Massachusetts and, Rhode Island, would not all their exhausted land be resuscitated, and their rich lands be ditched and drained and improved, and all their lands rise in value? Let the farmer, then, instead of being forever content to be made the hack-horse of office-hunting politicians, inquire why is it that this cannot be so? Let him first buy and read Carey's book, "The Past, the Present, and the Future." One word more: suppose a few thousand dollars to be offered by the Government, every year, as premiums to the first importers of labor-saving machinery in all our industrial employments—the originality and value of it to be judged, and the premiums to be awarded by such men as Professors RENWICK and JACKSON, and Col. GADSDEN, Gen. MCNEILL, JAMES S. WADSWORTH, EDWARD STEVENS, and others eminent for attainments and experience in the various departments of Industry, both in science and in practice—would not thousands thus held out, result, when applied, in greater benefit to the substantial interests of the country than the millions that are now expended in life salaries to supernumerary officers—in soldiers, garrisons, guns, powder, &c. &c. ?—But enough, for the present. As long as you, Farmers, dare not speak for yourselves, or support even one paper that does, how can you expect mere politicians, looking for the spoils, to speak or to act for you?

It is to be remembered that Sir Richard Arkwright took his first patent for an entirely new method of spinning cotton yarn for warps in 1769, at which period his first mill was put in operation at Nottingham, in England, and his second mill, which was much larger, was erected at Cromford, Derbyshire, in 1771. After which, his mode of spinning by water-frames extended rapidly all over the kingdom; so that during the period when the most persevering exertions were being made by various enterprising individuals, in different parts of the United States, to improve and perfect this most important manufacture, England was enjoying all the benefit of Arkwright's patents, by means of which cotton yarn was produced at much less expense and of a superior quality to any that had ever been made by machinery before that period; and, at the same time, the British Government were using every means in their power to prevent models or drawings of these machines from being carried out of the country. Every effort to erect or import this machinery into the United States had hitherto proved abortive. Much interest had been excited in Philadelphia, New-York, Rhode Island, and Massachusetts, but they found it impossible to compete with the superior machinery of England.

Such was the state of the cotton manufacture in the United States in 1790; every endeavor to introduce a proper system of spinning had been fruitless; and nothing but the introduction of the water-frame spinning, which had superseded the jennies in England, could have laid a foundation for the successful prosecution of the business in America, and that was happily accomplished by one who was personally and practically acquainted with the business in all its details. The individual here referred to was Mr. Samuel Slater, who has justly been called the *Father of the Cotton Manufacture of America.*

Mr. Slater was born in the town of Belper, Derbyshire, England, on the 9th of June, 1768; and when about fourteen years of age, he was bound apprentice, at Milford, near Belper, to Jedediah Strutt, Esq., (the inventor of the Derby ribbed stocking-frame, and for several years a partner with Sir Richard Arkwright, in the cotton-spinning business.) At that time Mr. Strutt was erecting a large factory at Milford, where Slater continued to serve him for some time in the capacity of clerk; but, during the last four or five years of his apprenticeship, his time was solely devoted to the factory as general overseer, both as respected the making of the machinery, and in the manufacturing department. After having completed the full term of his engagement, viz., six and a half years, he continued for some time longer with Mr. Stuart, for the purpose of superintending some new works that were then erecting. His design in doing so was to perfect his knowledge of the business in every department, as previous to this time his thoughts had been directed to America by various rumors which had reached Derbyshire, of the anxiety of the Governments of the different States in that country to introduce and encourage manufactures. A newspaper account of a liberal bounty of £100 having been granted to a person who succeeded in constructing a very imperfect carding-machine for making rolls for jennies, and the knowledge that a Society to Promote Manufactures had been authorized by the same Legislature, finally de-

termined him to try his fortune in the Western Hemisphere.

He embarked at London for New-York, on the 13th of September, 1789, and landed at the latter on the 17th of November, after a passage of sixty days. He was, immediately after his arrival, introduced to the New-York Manufacturing Company; but, finding that the state of their works did not suit his views, he left that place in the January following for Providence, R. I., and there made arrangements with Messrs. Almy & Brown to commence operations for spinning cotton entirely upon his own plan. On the 18th of the same month, the venerable Moses Brown took him out to Pawtucket, *where he commenced making the machinery, principally with his own hands;* and on the 20th of December, 1790, he started three cards, drawing and roving, together with seventy-two spindles, entirely upon the Arkwright principle, being the first of the kind ever operated in this country. These were worked by the water-wheel of an old fulling-mill in a clothier's building, in which place they continued spinning about twenty months, at the expiration of which time several thousand pounds of yarn were on hand, notwithstanding every exertion was used to weave it up and sell it.

Early in 1793, Almy, Brown and Slater built a small mill in the village of Pawtucket, in which they put in operation seventy-two spindles, with the necessary preparation, and to these they gradually and slowly added more and more, as the prospects became more encouraging. After a short time, besides building another factory, they considerably enlarged the first.

Such, then, were the circumstances under which the Arkwright mode of spinning was introduced into this country, and such was the individual to whom belongs the entirement of its introduction.

Mr. Slater's business was so prosperous that about the year 1806 he invited his brother, Mr. John Slater, to come to this country, who, in all probability, brought with him a knowledge of all the most recent improvements made by the English spinners. The now flourishing village of Slatersville, in Smithfield, was then projected, in which John Slater embarked as a partner, and in June of the same year removed to Smithfield as superintendent of the concern. In the spring of 1807, the works were sufficiently advanced for spinning, and up to the present time they have been under the management of that gentleman, in an uninterrupted state of improvement. This fine estate was owned, in equal shares, by four partners, but now wholly belongs to John Slater and the heirs of his brother.

Cotton-spinning, according to the preceding statements, commenced in the then obscure village of Pawtucket, in 1790, at which time only twenty-two spindles were put in operation.

Previous to 1815, the whole weaving in the United States was done by hand-looms, in many of which considerable improvements had been made, and great quantities of cloth were manufactured for home consumption. About 1814, a Mr. Gilmour landed in Boston from Glasgow, with models or patterns of the power-loom and dressing-machine, whom Mr. John Slater invited to Smithfield, and made known to him his wishes to construct these important machines; but not being able to prevail on the whole of the partners to engage in the business, Mr. Gilmour remained some time in Smithfield, employed as a mechanic, where he introduced the hydrostatic press, which proved to be of great advantage in pressing cloth, &c.

Judge Lyman, of Providence, had been endeavoring to construct a power-loom, but failed in the attempt. On hearing of Mr. Gilmour, he, with some other gentlemen, entered into a contract with him to build a power-loom and dressing-machine, from the patterns he had brought from Great Britain, which he did, to the great satisfaction of his patrons, from whom he received a compensation of 1,500 dollars. These machines were soon after introduced into Pawtucket, where David Wilkinson commenced making them for sale. Gilmour was a man of great mechanical genius, but neglected to turn his talents and opportunities to the advantage of his family, and consequently, on his death, they were left in poor circumstances.

The hand-looms were soon superseded by the others, the introduction of which greatly aided in extending the business in this country, and has enabled the American manufacturers to compete with Great Britain, in South America, India, and some other foreign markets.

But what is your warrant, says the agricultural reader, for appropriating so much space, that should properly be given to practical farming, to an exposition of the origin and growth of manufacturing industry and the agency and celebrity of an individual, however enterprising, who laid the foundation of it?—Though this is a very natural question, it seems to us that a very simple answer will suffice; and this is it:

Look, for a moment, at Virginia and Rhode Island: Virginia has employed in agricultural production, 318,771 persons; these are *producers*. Now, within her borders she has, as consuming *non*-producers of agricultural products, 54,147, or about six producers for one consumer. Now look at Rhode Island,

and there contemplate the fruit of a policy which fostered the enterprise of this Father of her manufactures. She has 16,617 agriculturists, and within her bosom non-agricultural producing consumers of the fruits of her fields, and orchards, and gardens, 21,271, or nearly *three consumers for one producer!*—And again: while 1,239,797 people of Virginia, have, as customers, manufacturers the annual value of whose products is only $8,349,218; the 69,110 people of Rhode Island have among themselves the capital and the citizens producing to the value of $8,640,626. And again: while the Virginia farmers have to travel with their produce over a surface of 61,000 square miles, to find and supply their consumers, who produce these $8,349,218, the Rhode Island agriculturists find the customers who produce a greater value of manufacturing within 1,200 instead of 61,000 square miles! Thus the Virginian must, in the average and aggregate, travel over 60 times the space. If time is money, as it must be with every industrious man who deserves to be called a man, is it not important that he should effect his exchanges, that is, sell and buy, in the smallest space and in the shortest possible time, that he and his wagons and horses may be improving his machine of production at home, instead of wearing out his wagons and teams, and wasting his manure and his substance on the road, in the work of exchange, which eats up half his produce? The time that he spends on the road, the Rhode Islander, having brought the consumer to his door, spends on his farm—pruning his orchards, soiling his cows, planting his potatoes, digging, ditching and draining, and filling his barn-yard with muck, &c. Ask you, then, what benefit it is to the farmer to show him the effects of a policy which makes men congregate instead of scattering? And as for the brief memorial of Mr. SLATER, has the reader of the Journal yet to learn that we deem such men far more worthy of honor, and of being held up to the emulation of our young men, than all mere warriors, from Genghis Khan down to Abd-el-Kader.

SHEEP DOGS.

DOG LAWS—THE PROTECTION OF SHEEP FROM DOGS.

A FRIEND writes us from Columbia, S. C., that he has lately again "lost upward of one hundred sheep by the depredations of sheep-killing curs. It has quite disheartened me. We must have a dog law."

We have repeatedly before referred to this intolerable nuisance in the South—sheep-killing dogs. What a practical exemplification is above presented of the extent of the evil! One of the most spirited improvers of Agriculture in South Carolina—a gentleman who has been at much pains and expense to introduce improved breeds of sheep into that State—finds himself in a night robbed of his property—arrested in his career of improvement—"disheartened," perhaps, from making any future efforts.

Is South Carolina willing to throw away the benefits of Sheep Husbandry—recently *demonstrated* in our pages to be of such incalculable utility to her—all to enable individuals of a very peculiar taste, to say the least of it, to surround themselves with an army of vagrant, worthless curs, to eat up their masters' and other men's property?

We agree with our correspondent: South Carolina, and every other Southern State, require a dog law stringent enough to reduce the number of dogs to the actual wants of the people. What should be the provisions of such a law we cannot so well determine. The owner of a dog would be liable at Common Law for the depredations committed by it. But the owners of many of them—of the very ones which would be the most likely to go *from home* in quest of food—would not be pecuniarily responsible. So this remedy would amount to nothing.

In Col. Randall's Letters on Sheep Husbandry in the South, Vol. II., p. 472, the following abstract is given of the dog laws of New-York:

> In New-York it is provided by law that every bitch over three months old shall be taxed $2; every additional one owned by the same man $5; *two* dogs over six months old $1; every additional one $3. The avails of these taxes constitute a fund out of which Supervisors of Counties are to pay for any sheep slain by dogs whose owners are unknown.
>
> Any person may kill any dog "which he shall see chasing, worrying or wounding any sheep," unless by direction of the owner of the sheep.
>
> The owner or *possessor* of any dog, on being notified "of any injury done by his dog to any sheep, or his dog having chased or worried any sheep," must within 48 hours kill his dog, or forfeit $2 50, and the farther sum of $1 25 for every 48 hours, unless "it shall satisfactorily appear to the Court that it was not in the power of such owner or possessor to kill such dog." (Revised Statutes of New-York, vol. i. chap. xx., title xvii.)

It seems to us that the planter or farmer ought to have legal power to kill any dog found in his fields, or lingering about his premises without his owner—or to kill a strolling dog anywhere, unless wearing a collar with the master's name on it. In the North, this is a privilege usually taken by sheep farmers, without any legal enactments. A strolling dog not recognized, and not pursuing his journey in the highway, or not crossing inclosed land in pursuit of game, finds short shrift and a bullet. We see nothing wrong in this. Self-protection demands it. It is difficult to detect curs killing sheep, and to identify them, as their depredations usually take place in the night. It is difficult to shoot them in the night or to trace them home. With a properly enforced taxation of dogs, it might not be so necessary; but before this is done, and until this is done, we advise that the least lenity comporting with propriety, be shown to vagrant and strolling curs.

The most efficient protector of sheep by night and day, undoubtedly, is to be found in some of the larger races of the sheep dog—those which will at once seize upon and kill any dog which molests the flocks under their charge. We have at various times alluded to these several races—and they will be found described with considerable minuteness in Letter XVII. (in the present number of this Journal) on Sheep Husbandry, with portraits of several of the varieties.—The large Mexican sheep dog—descended from the Spanish—for a union of sagacity, fidelity and power, has no superior. His charge are entirely safe from curs, and even wolves. If a few of these could be purchased and sent home by our victorious troops, they would be of incalculable advantage to the wool-growers of our country.

G. W. La Fayette has in training a pair of the shepherd's dog, such as is generally used and most esteemed in France, to be sent along with a couple of the Pyrenean Wolf dog breed, to the Editor of The Farmers' Library, and destined for the use of Col. Hampton, whose flock affords the best mutton from the pastures in February, without any extraordinary keep. His flock of several hundred, we once heard him remark, had not eaten ten dollars' worth of grain in a year. If the Southern agriculturist who has read the ample and well-digested

Letters of Col. H. S. Randall, in this Journal, does not have recourse to sheep and wool growing as an important resource, to which that region is demonstrated to be well adapted, it will not be for want of ample advice and illustration. These Letters and their author have all the requirements of experience, judgment, scholarship and character to recommend them.

MORE LAST WORDS ABOUT THE POTATO DISEASE

(From the American Journal of Agriculture and Science, conducted by C. N. BEMENT.)

Knowing no one better, if so well, qualified to throw light on this subject, where that light is to be reflected by Science, as Mr. TESCHEMACHER, the author of the following, we take leave to transfer it from the highly respectable medium in which we find it to our pages:

I had intended to remain altogether silent in future on the subject of the Potato Disease, for it is impossible to reply to assertions and arguments used by Editors of Agricultural Periodicals, themselves possessing not the least practical or personal knowledge on the subject, such as—"Everybody has given up the *fungus theory* now," and "There is nothing new on the subject of the Potato Disease, except that all the nostrums proposed have failed." Equal loss of time would it be to discuss experiments tried on a row or two of potatoes in a garden with salt or with fifty incongruous mixtures, one ingredient of which might destroy the action of the other—or if any one had succeeded, it would be impossible to say to which his success was owing. I have tried salt in my own garden on potatoes, and have never had a single diseased tuber, but I never thought to bring this forward as a decisive experiment.

A mutual friend whom I highly esteem has urged me strongly to write a few lines to you on the subject; I therefore beg to state:

That the microscopic observations made by me in the autumn of 1845, and communicated then to the New-York State Agricultural Society, at their own request, have been confirmed in 1846 and 1847 by scientific Commissioners and Committees in almost every country in Europe.

That a great many experiments have been tried with salt on large breadths of land, and in a large proportion of these the potatoes have been completely saved, while all around were diseased. That this remedy has failed in some cases in being a complete protection, is all well known to me, but even here the proportion of diseased potatoes was much less than where salt had not been used. The cause of this is very evident: I have always stated that the salt must be in contact with the disease to effect its destruction. Now let any one consider in a tenacious clayey soil, or in one of a light gravelly nature, how easily this contact may accidentally fail. My conviction is more firm than ever that the cause of this disease is a fungus, propagated by clouds of invisible spores, (seeds,) which settle in some places and not in others, just as the wind listeth or bloweth, and that wherever they come into contact with salt, when they settle down they cannot vegetate. A heap of diseased potatoes from two to three acres will give sufficient spores to infect a district five hundred miles square; these spores only ripen and become dry enough to live and float in the atmosphere toward the middle of the summer, and then take some time to settle and vegetate; every fungus collector knows that the latter end of the summer is the most favorable period for these minute productions; from this we see the reason why the earliest planted potatoes are generally the freest from disease.

A paper has appeared within the last few days from Dr. Klotsch, of Berlin, Prussia, detailing a new method for strengthening the potato, and increasing its chance of escaping disease. This new method is the old practice called by gardeners *stopping*, and has been practiced by them time out of mind, on cucumber, melon, pelagonium and almost all plants; it consists in pinching out the top of a shoot, thereby encouraging it to throw out lateral branches, and become strong, bushy and fertile. This is a dangerous process in unpracticed hands, as if the stopping is continued a little too long the potato would not ripen, and if begun too early would materially injure the plant; it would probably be much too expensive in point of labor in this country.

I hope this communication will answer your purpose, and I take the opportunity of stating that I am quite tired of the subject, and will not be moved by any consideration to engage in farther discussion thereon—let those who choose, try salt as a remedy, and the other leave it alone.

Boston, 8th April, 1848.

In confirmation of the above we find the following communication in the Mark-Lane Express of the 17th of April, 1848:

POTATO DISEASE.—*Sir:* In the spring of 1847, I was advised by a neighbor to sow agricultural salt broadcast on the ground intended for potatoes, before it was prepared for the crop, after the rate of a peck to five square yards of land. I did so, and the crop proved a very good one, and has kept free from blemish or any particle of disease, throughout the winter to this time. On some ground adjoining I omitted to sow any salt, and the potatoes grown thereon were scabby and diseased. I came therefore to the conclusion that salt is a preventive of the disease, and I send these facts to you for the benefit of the public. A FARMER.

Hurst Green, Sussex, April 13.

Written for the American Courier.*

CHRONOLOGY AND CURIOSITIES OF AGRICULTURE;

WITH PRACTICAL SUGGESTIONS.

BY JOHN S. SKINNER.

Founder of "The Turf Register," and "American Farmer," and Editor of "The Farmers' Library."

WHAT ARE THE IMPEDIMENTS TO THE IMPROVEMENT OF AMERICAN AGRICULTURAL INDUSTRY?

A THOROUGH discussion of this subject, in an Agricultural Society, or elsewhere, would probably result in the conclusion that the greatest impediment is the want of a *more enlarged and comprehensive system of education, adapted to the condition and pursuits of the agriculturist.* With such a system, every art and every industry of the country would be meliorated and advanced. The cultivators of the soil, in gaining knowledge, would gain power—power in the management of their own means and faculties, and their just share of influence over the action of the Government. The state of their Agriculture, and the estimation and political power of those who follow it, are the best possible tests of the state of civilization in all countries. The Earth is the great producing machine, after all, and in a national and rational point of view, all other pursuits and machinery are beneficial in proportion as they contribute to the improvement of the great machine of production on which all classes depend for their occupation and bread.

No great substantial and pervading amendment can be realized except from and along with a broader and better digested system of education in reference to the working and use of this great machine of production—mother Earth. If farmers submit to the appropriation of eighty cents in every dollar of the taxes levied on them, for the support of military establishments, Army and Navy Schools among the rest, why do they not compel their Representatives to demand something, if only in the way of commencement, for *Agricultural Schools?* Will any man say that Science cannot do as much for enlightening and rendering more efficient the use of the plow, as it can and has done for that of the cannon and the sword? And as to Constitutional power over the subject, if Uncle Sam can turn Editor and book-publisher, sending out his 150,000 volumes annually, in rivalry and destruction of the Agricultural Press of the country, may he

* A family newspaper of the largest size and of deservedly popular character—so much so that its increasing circulation now ranges above sixty thousand—Andrew McMakin, Editor and proprietor; price $2 a year; published in Philadelphia. It is highly illustrated, and its contents so various that he must be more cynical than Diogenes or the Bachelor of the Albany himself, who does not find in it something highly entertaining. A column like the articles here transferred to our pages is every week given for the amusement and instruction of agricultural and horticultural readers.

not turn schoolmaster also? Has he not power to disseminate information in one form as well as in another?—for it is but a choice in the manner of coming at the same object, only that he happens to choose the least instead of the most efficient and durable means. In his Patent-Office Report he gives merely the statistical *facts*, instead of the scientific principles—shows agricultural results, instead of establishing institutions for teaching how the best results are, under all circumstances, to be realized.

LIME, USED WITHOUT KNOWLEDGE AND ABUSED WITHOUT REASON.

There are few things about which practical farmers have more differed, or been more puzzled, than about the efficacy and value of *Lime*—some affirming it even to be worthless, others regarding it as the great panacea for all the ills that afflict the husbandman. For much of that diversity of experience and opinion, Mr. Norton, of Yale College, the accomplished Professor of Chemistry, as applied to Agriculture, thus briefly and readily accounts:

"I would not for an instant be thought to undervalue practical experience; its results have been great and important, and in many cases Science has only followed to explain what Experience has before discovered. But the process of discovery by experiment alone, is always painfully slow, because the experimenter has no clear perceptions to guide him. In many cases, errors and inexplicable differences of opinion arise, because results of an opposite character are obtained by individuals in the same neighborhood.

"I once attended a meeting of a Farmers' Club in Ayrshire, Scotland, where the subject of discussion was Lime. All were from the same neighborhood, and all used lime, but scarcely any two agreed in their estimation of its effects. Some considered it one of the most valuable manures employed, and others condemned it entirely. The discussion was perfectly unsatisfactory in its termination, each person being only confirmed in his own opinion. The true explanation of their differences consisted in the fact, that the soils of their district were derived from the decomposition of *two species of rock*, the one of which *abounded in lime*, while the other was *almost entirely destitute*. This was a case in which experience gave no information as to the course most advisable in individual cases. Expensive experiments were necessary in each instance, and after all this expenditure of time and money, no general or useful result was arrived at. But on the other hand, theory alone is almost as objectionable as practice alone. Results obtained in the laboratory, or on paper, are by no means to be considered as applicable to practice until tested by experience. Ignorance of this fact has led some of the most eminent philosophers into deplorable errors, and has caused many practical men to regard scientific Agriculture as but another name for quackery. The only true course is to unite practice and theory, guiding and explaining each by the other. The utmost possible advance would then be made in both directions, because all experiments would be for definite ends and guided by clear, intelligent views.

"When we attentively consider the principles which I have now endeavored to present in a connected form, we perceive that they are not only simple, intelligible and practical, but also beautiful. That endless chain which joins the dead earth to the living plant, the plant to the animal, and the animal to the earth again, is even sublime in its unceasing series of changes."

We may add that we have known farmers who have, in the beginning, been most charmed by the effects of lime, who afterward began to doubt, and at last condemned it as an exhauster. This has been because they have looked to it to supply *everything;* and when their lands have been exhausted of other things necessary to the growth of their crops, instead of supplying these other things, they have turned indignantly and unjustly upon the lime, because it has not continued to do what it never could and never promised to do. All this is explained by that eminent and profound agricultural writer, VON THAER, and by others.

WHAT SCIENCE IS DOING FOR AGRICULTURE IN ENGLAND.

The reader may form some idea of this, when it is seen that chemical investigation has undertaken to determine, with confidence, and with an accuracy sufficient for all useful purposes, the *quantity of food necessary to produce one pound of flesh, and the cost of its production*, according to English prices. This last we omit, on account of the difference between English prices and ours, leav-

ing every reader to ascertain the cost, according to the value of the food in his own neighborhood, or on his own estate:

25	pounds of milk furnish *one pound of flesh.*			9	pounds of oatmeal furnish *one pound of flesh.*		
100	.. of turnips			7 1-10	pounds of barley-meal		
50	.. of potatoes			7 4-10	.. of bread		
50	.. of carrots			7 4-10	.. of flour		
4	.. of butcher's meat, free from fat or bone, furnish 1 lb. of flesh.			3 1-2	.. of peas		
				3 2-10	.. of beans		

Table showing the approximative value of various kinds of food as fuel to sustain animal heat:

4	lbs. potatoes contain 1 lb. carbonaceous fuel.			1 1-2	lbs. oatmeal 1 lb. carbonaceous fuel.		
10	lbs. carrots			1 9-10	.. beans		
1 1-2	lbs. flour			1 9-10	.. peas		
1 1-2	.. barley-meal			2	.. bread		
11 7-10	.. turnips			11 8 10	.. milk		

MODE OF CULTIVATING CELERY.

The trench must be made, and the bottom of it well manured with old farm-yard manure, in the usual way; a day or two after the celery is planted let a man walk on each side of the plants, just measuring the length of his foot on each side; then slack 4 lbs. of guano in 30 gallons of water, stirring it well every 3 or 4 hours for 24 hours. This will be about the quantity for 20 yards of celery, which must be gently put on immediately around the plants. In a day or two, a slight sprinkling of salt may be put on the plants and on the earth about. The slight salting may be repeated every 10 or 12 days. When the plants are sufficiently grown to be earthed, repeat the guano as above, previously, after earthing, treading the plants on each side. After this, no more guano must be used, but every 12 or 14 days a slight sprinkling of salt must be repeated. Celery is very fond of soap-suds, and so it is of salt. Hence we find it growing spontaneously along the salt-water shores of the Patuxent and of West River, at high-water mark.

JEWISH MODE OF SLAUGHTERING CATTLE.

This mode is so humane and considerate that for that, if nothing else, the disgraceful impediments and liabilities which prevent their full enjoyment of all political rights ought to be expunged and done away with forever. A sharp knife—so sharp, in fact, that the least notch in the blade would render it unlawful to use it for the purpose, is drawn across the throat of the beast, which causes instantaneous bleeding to death. The rabbinical laws as to the smoothness of the blade are remarkably stringent, lest any bluntness may cause the animal unnecessary pain.

SPRING WHEAT.

THERE is assuredly an opening for a farther trial of Spring Wheat than has been made in our country. It might offer a means of escaping the fly, and afford employment for labor and for land, that could not be conveniently put in requisition in autumn.

We find the following remarks at a late meeting of the Royal Agricultural Society of England. Ought not measures to be taken by Societies and Institutes to import all the highly recommended varieties of wheats, and the seeds of new grasses and vegetables abroad? Suppose they should, in general, not prove valuable, yet in a single case, ample compensation might be found.

Of what avail is an ostentatious display of *translations* at Farmers' Clubs about new varieties of the "*cruciferæ*," if no measures are taken to import them or their seed for practical trial and use by those whose peculiar business it is to do it, and who have in their hands, lying idle in "5 per cent. stocks," ample means, placed there by a generous and confiding public?

BEARDED WHEAT.—Mr. Halcomb, of Poulton, near Marlborough, reported to the Council the success with which he had cultivated a new variety of Bearded Spring Wheat, adapted for soils not suited to barley, or for late sowing after turnips, from seed furnished to him by Mr. Elliot, of Jedburgh, in 1840, originally obtained from Mr. Dickson of Hawick, by whom it had been introduced into Scotland from Russia. Mr. Halcomb put a portion of this seed into the ground on the 18th of March, and the remainder into an adjoining piece of the same land on the 3d of April, after a crop of turnips fed off by sheep, and plowed for seed early in March. The earlier sown was reaped on the 15th August, and the later sown on the 18th of the same month, having begun also at the latter date to reap his autumn-sown Wheat.—Apparently there was no difference in these crops; but on threshing them the produce of the autumn sown proved to be only thirty-three bushels per acre, while that of the spring sown was forty bushels. He had sown this new spring variety every year since, and had generally the same quantity per acre as from the autumn-sown Wheats. He had never found the crop deficient, excepting when he had been unable to get a fine tilth, after feeding off turnips with sheep, with a subsequent dry summer. In a trial last spring, Mr. Halcomb grew in the former case, from two bushels of seed per acre, thirty-two bushels; and, in the latter, from three bushels of seed per acre, on the adjoining ridge and sown at the same time, forty bushels of grain, which proved, to his surprise, of superior weight by 7 lbs. per sack. He had never grown more than forty-one bushels per acre of this wheat, but he had been told by other parties of their having grown, on superior land, forty-eight bushels, and in one instance, fifty-six bushels. The price of this new variety in Devizes market was usually rather above that of the autumn Wheats. Mr. Halcomb conceived that its greatest advantages would be found in its suitableness for soils subject to blight. The last season, on land where the autumn wheats were scarcely worth cutting, the "April" Wheat, to which Mr. Halcomb then called the attention of the Council, was estimated at forty bushels per acre. He thought also, that from its early maturity it would be found serviceable for making good deficiencies of plant in the autumn sown. The Council ordered their thanks to be returned to Mr. Halcomb for the favor of this communication.

ARTIFICIAL MANURES.

IT would seem by the following, which we cut from a late Mark-Lane Express, that we have yet much progress to make before we come up with the farmers of England in the preparation of substitutes for barn-yard and other ordinary manures:

Subjoined are the present prices of several sorts of manure:

Agricultural salt 30s. per ton.
Alkalies 28s. and 42s. per cwt.
Boast & Co.'s (Bow) inorganic manures, from 6s. to 11s. per cwt., according to crop.
Boast's guano £9 9s. per ton.
Carbon 12s. per qr.
Chie fou 21s. per cwt.
Chloride lime 28s. per cwt.
Clarke's compost £3 12s. 6d. per hhd., sufficient for three acres.
Fothergill's gypsum 35s. per ton.
Fothergill's phosphate of lime £8 10s. per ton.
Graves £6 10s. per ton.
Guano, Peruvian, £9 9s.; Bolivian £9 9s.; African £6 6s. to £7 10s. per ton, according to analysis and quantity.
Gypsum 30s. per ton.
Highly concentrated manure 30s. per qr.
Humus 14s. per qr.
Bone-dust 18s. 6d. per qr.
Half-inch bone 17s. 6d. per qr.
Hunt's stuff graves 3s. 6d. per cwt.
Hunt's new fertilizer 13s. 4d. per qr.
J. T. Hunt's artificial guano £9 per ton.
Manure powder 16s. per qr.
Muriate of lime 6s. per cwt.
Muriate of ammonia 25s. per cwt.
New-Bristol manure 8s. per qr.
Nitrate of soda £14 10s. to £15 per ton.
Nesbitt's Manures (prepared by the London Manure Co.) £8 to £14 per ton, according to crop.
Nitrate of potash (saltpetre) £26 to £28 pr ton.
Patent disinfected manure £9 per ton.
Petre salt £2 per ton.
Potter's guano £9 per ton.
Preparation for turnip-fly 10s. 6d. per pakt. sufficient for three acres.
Rags £4 to £4 10s. per ton.
Rape cake £6 per ton.
Rape dust £6 6s. per ton.
Soap ashes 10s. per ton.
Soda ash 12s per cwt.
Spence & Co.'s urated bone manure £8 pr ton.
Sulphate of soda 6s. per cwt.
Sulphur for destroying the worm on turnips 12s. per cwt.
Sulphuric acid 1½d. per lb.
Superphosphate of lime 7s. 6d. per cwt.; £7 per ton.
The Liverpool Abattoir Company's animalized manuring powder £2 10s. per ton.
The urate of the London Manure Company £4 4s per ton.
Willey dust £4 4s. per ton.
Wolverhampton compost (Alexander's) 12s. per qr. subject to carriage to London, or forwarded from Wolverhampton.

RHUBARB, OR THE PIE-PLANT.

No vegetable, within our knowledge, unless it be the tomato, has more rapidly come into general use, nor does any possess higher merits to recommend it, than the Rhubarb, or Pie-plant, as it is called, from the great quantity of material it supplies very early in the season for pies of the most palatable and wholesome description. Another strong recommendation is, its capacity to withstand and grow in the coldest climate. From the 1st to the 12th of May, we found it every day, as far north as Boston, on the table d'hôte of the Tremont House—an establishment unexcelled in all the requisites of excellence—forming a part of the dessert both various and exquisite, and saw it growing in most of the gardens around the city. The increase in the consumption of it may be judged by the fact that a gentleman in Boston remarked that near London, he had known a gardener to extend the culture of Rhubarb, within his personal recollection, from one up to *seventy acres!*

In a late number of the Gardener's Chronicle, we find the following

Practical Hints for Amateurs and Small Gardeners.—*Rhubarb.*—This wholesome and agreeable vegetable has become so popular as a substitute for fruit in the early spring, that no garden should be without it. It will grow anywhere, is so hardy that no frosts will injure the roots, however much exposed, and is so prolific that a few plants will yield a plentiful supply of stalks for a large family. Yet, notwithstanding the ease with which it is cultivated, we often see it badly grown, and sometimes hear the complaint that parties have failed in their efforts to get a crop. Our remarks will obviate every objection, if attended to, and enable our readers to grow Rhubarb for themselves with ease and success.

Rhubarb has a hard underground stem, which pushes forth its buds plentifully at the crown, or part nearest the surface; every one of these buds taken off with a portion of root adhering to it, will form a large plant in one season. If you wish to make a plantation now (although the season is rather too far advanced, it may still be done), get as many buds or crowns as your bed will admit of, allowing each two or three feet every way, according to the habits of the varieties you prefer. The plan generally adopted is to purchase as many roots as are necessary to fill the allotted space; but this is a more expensive and far less eligible method than the one now recommended. Last year a new sort of Rhubarb was offered in the neighborhood of the writer at 5s. a plant. Some of his friends purchased four or five roots, but he was satisfied with one. On receiving it he placed it in a hole, and covered it up with soil until February, when, on examination, five good buds were developed. The root was then divided into five parts, each of which, at the present time, is a large flourishing plant, equal to any of those which were not divided. A bed was thus obtained for 5s., equal, indeed superior, to some costing 25s. We are convinced, from actual experiment, that Rhubarb may be brought to perfection in one year; that old beds are inferior to new ones; and that fresh plantations should be made every two years. The old plan of making a bed to descend to posterity should be exploded, in reference to many garden productions. Strawberries, raspberries, Rhubarb, &c., should be removed often, if fine healthy produce is wished for.

Having a sufficient number of buds or crowns, let them be planted in a well trenched and manured soil. If the leaves are developed, care must be taken to prevent their flagging. This may be done by placing over them some long litter, sufficient to answer the purpose without excluding light and air. The young plants will soon be established, and will grow rapidly. *No leaves must be taken off the first year*, as the object is to convey all the elaborated sap possible to the stem for future use. If the ground is good, and *kept free from weeds*, no more care is required, and abundance of fine stalks can be taken off next spring. An exposed situation, with plenty of sun and air, will of course bring this production to greatest perfection; but it will produce good crops without having these advantages fully. Every house with a garden, however small, may thus furnish the table of its owner, with little expense and trouble.

But Rhubarb possesses the advantage of being forced with as much ease and as cheaply as it is grown in the open air. This may be done by growing it against a wall in a sunny aspect, and covering it when required with pots or boxes, over which fermenting materials must be placed. But decidedly the best method is to take the roots into the house to

be forced. For this purpose they must be grown exactly as recommended above, that as much power may be treasured up in the roots as possible. To take up exhausted plants from a crowded bed, which has been stripped of its leaves during the season, is to deprive them of their natural advantages, and to expend the forcing process on weakened and imperfect subjects. Let cuttings, with a crown to each, be now put in, in the best possible situations, and by autumn they will be admirably adapted to your purpose. When the foliage is withered, take up the roots, and put them singly into large pots or boxes. These may be stood away anywhere, and introduced, two or three at a time, into a warm situation. The writer placed his pots this winter in a dark closet, at the back of a kitchen range, and the Rhubarb grew rapidly. Every house can find some spot having the advantage of greater warmth than the ordinary temperature. Rhubarb may thus be had at any time, and a good supply kept up until it is produced in the open air. It is very necessary to get it as early as possible, as its value is much lessened when gooseberries are plentiful.—H. B.

NEWCASTLE FARMERS' CLUB.

THE CULTIVATION OF TURNIPS.

Mr. Ramsay introduced the subject: The kinds of turnips most commonly cultivated are the Swedish, the hybrid (said to be raised between the yellow bullock and Swede), the yellow bullock, the Aberdeen yellow, the white globe, the green globe, and occasionally a few other sorts, with various names. The Swedish bears the frost well, and will keep till June. It does not yield so weighty a crop as the globe, or some other kinds: nevertheless its feeding qualities more than compensate for the loss of weight per acre, and it is generally consumed by the highest priced stock on the farm: such as animals feeding fat, and milch cows, and those generally kept for use till spring months, it, like the carrot, feeding best when partly withered in appearance. Too great exertions cannot be made to have a sufficiency of the Swedish turnip, as it is valuable spring food for every animal on the farm. It is rather more expensive to raise than some other kinds, requiring more manure, but its quality more than compensates for the difference in cost of producing. A good crop of Swedes will weigh twenty tons per acre, if raised upon useful land, and the price in Newcastle at this time is 25s. to 26s. per ton. The hybrid, the yellow bullock, and Aberdeen yellow come next in order as to their feeding qualities, as well as keeping in the spring.—They are all useful turnips and approach nearest the Swedish. They can be grown upon lighter soil than the Swedes, and are consequently often substituted for them. They can be sown later, which is an advantage in some seasons, particularly when many potatoes are grown, the latter requiring much spring labor. The globes are most valuable for producing a great weight per acre. All kinds of cattle and sheep are fed upon them, from the beginning of November until after Christmas, and in many instances in the spring months; but they do not keep so well as the Swedish and yellow turnips, consequently are generally fed off first. Enormous weights per acre are said to be produced—even as far as 60 tons per acre. I have had 50 tons myself, which I was well satisfied with. I will not say 63 tons have not been grown, as I know occasionally larger crops of all kinds are produced: however, I should think 30 or 40 tons per acre easily attainable. All descriptions of soil are now made to grow turnips; and they have become so necessary to the raising of dung, and rearing and feeding of cattle and sheep, that one now scarcely knows how to carry on his agricultural operations without them. All stock are kept healthy when judiciously fed with them, and when eaten on dry land by sheep they increase the following crops to a great degree. The turnip crop takes the place of a summer fallow, generally speaking. The land is plowed before winter, and again early in the spring, either across the first plowing or otherwise. In the months of April, May, or June, the land, with frequent stirrings with the plows, harrows, and scarifier, is made as fine and clean as possible. I find the latter implement very useful in assisting to prepare the land well, and recommend a more extended use of it; it is expeditious, and drags the quickens and other woods to the top, where the sun and air act powerfully upon them; it does not cut the quickens so much as the plow, therefore more effectually destroys them. I think the land cannot well be reduced too fine for producing turnips The seed being very small requires a well pulverized bed, which not only causes the seed to germinate quickly, but accelerates the growth of the plant when young; consequently assists it in escaping the fly, one of the greatest enemies of the young plant. When I advise frequent plowings, &c, I would wish to guard against this being done too rapidly—having seen great losses occasioned by working all the moisture out of the ground before the seed is sown. There ought to be intervals between the plowings; and if the weather is dry the land should be well rolled down, and remain so for some time, to regain the moisture which has been drawn off by the continued exposure of the land to the sun and air. The distance of the drills for Swedes, as well as most other sorts, varies from 26 to 30 inches in width. After this is done the carts next deposit 10 to 20 tons of dung per acre, according to its quality, as well as the quantity which may have been made on the farm. It is then equally spread and covered in by the plow, and then is ready for the seed. If the season is tolerably fine, and the dung properly prepared, there will seldom be a failing crop. If these matters are duly attended to, I believe there will not be very many failures, making allowances for weather, over which we have

no control. I am pretty sure many of you have seen a great difference in a field sown on different days: nay, even between a few hours' sowing. This shows the necessity of watching closely the state of the ground at the time of sowing. There is often too much haste in getting the seed in, without considering whether or not the land is fit to receive it. Small neglects make, at times, great differences in the weight of crop. Having noticed the raising of turnips with fold-yard manure alone, I beg to recommend the general crop to be grown with part fold-yard and part special manure, of some kind or other. Since the introduction of special manures, too numerous for me to mention, the quantity of turnip-growing has been increased immensely. I cannot do better than recommend the members of the Club to read Rev. A. Huxtable's account of raising Swedish turnips upon land. He will tell you how, by the application of his chemical knowledge, he raised large crops from land as bad as land could possibly be, and which had never grown turnips before. (See sixth volume of the "Royal Agricultural Society's Transactions.") Certain it is that the extensive application of bone-manure has increased the quantity of acres under turnips to an amazing extent, and proved to be a most useful manure on all light lands. It not only has been found to produce large crops of turnips, but has also been found by experience to be a lasting manure. I have one field which has been entirely manured with bone-manure for sixteen years, and is much improved since the commencement, having been boned every fourth year. Next, as to seed. The very best ought to be purchased. Three pounds per acre is often recommended; I have found two pounds per acre quite sufficient, when the land is properly prepared. I would recommend land, intended for turnips, to be clean; for if land grows quickens, rest assured it cannot grow turnips. Also to have the soil well pulverized previous to sowing—to allow the drills to be ridged up a day or two before the drill is set to work—to be sure to have the manure well prepared and evenly spread—to use bone-dust, guano and other special manures along with fold-yard dungs, in preference to using any of them alone—to deposit the seed with a light covering of earth—to use good seed, and thin the plants ten to twelve inches, particularly Swedes, which require to be from twelve to fourteen inches asunder—to scuffle as deep as practicable, for the purpose of admitting air and water to the plants—to sow the Swedes about the middle of May—yellow bullocks and other yellow sorts as soon after as convenient, following on with globes till the middle of June, or even in some cases rather later, according to seasons—and not to attempt to sow more land than can be well be prepared and manured.

Mr. Joseph Laycock said the grand desideratum in Agriculture was the attainment of those particular ingredients which the plant required for its sustenance. To apply at random a number of ingredients, in the hope that if many were inoperative, others would nourish the plant, was extravagant and wasteful farming. Now what was it that the turnip most required? Chemistry answered the question. It was phosphate (or superphosphate) of lime that was chiefly needed; and the turnip-grower should inform himself how he could obtain the most of this manure at the least expense. He had heard this question discussed, and with much ability, at one of the meetings of the Royal Agricultural Society in London. Mr. Pusey, one of the speakers, pointed out what he considered the most inexpensive mode of procuring the phosphate; and he had adopted that gentleman's suggestion with great success; for when he, a few years ago, began farming, his predecessor in the occupation of the land assured him that it would not grow turnips, and yet he had succeeded, by following the plans of Mr Pusy and other enlightened agricultural authorities, in raising excellent crops. The phosphate of lime existed in bones, but in combination with matter which prevented its direct application to the land with good effect. The method which Mr. Pusey adopted, and by which he got rid of the difficulties which stood in the way of ordinary farmers in the use of phosphate of lime, was the following: He made a mound of soil, or, better still, of burnt ashes, and fashioned the summit into the form of a crater. Into this large basin he put a few half-inch bones, and then poured in some sulphuric acid (oil of vitriol); and so he went on, alternately putting in bones and acid. The proportions were 4 bushels of bones to 80 lbs. of acid. The cost of the acid was 8s. 4d., and of the bones 10s.; and this made a sufficient quantity for an acre. The mixture of the bones and acid evolved great heat, and he added 5 gallons of water—hot water. He had found it convenient, however, to mix for 2 acres in one heap of mould; because, in that case, one whole carboy of acid (160 lbs.) was required: and, of course, the quantity of bones and hot water must also be doubled. The mixture was stirred up with a hay-fork, and covered over with ashes for a day or two. It would then be found in the form of a powder, and should be turned over twice or thrice. He applied it with a seed-drill, mixed with fine powdered soil or ashes, at the rate of 4 bushels of the phosphate to an acre. It caused an early growth, and carried the plant quickly through that first stage in which it was most liable to flies, &c. For the growth of Swedes he had applied this dust with farm-yard manure, and would advise every farmer to do the same. It brought them 8 or 10 days earlier to the hoe; and every one knew what an advantage this must be. It might be asked, why make this phosphate, when it might be had of agricultural chemists ready-made? But, if the farmer made it himself, he knew what he was using. Turnips, with this manure, might not have so much top as with guano, but they would bulb well and keep well.

STARCH FROM DISEASED POTATOES.—Starch made from diseased potatoes, it is said, has been found to injure silk goods when used to stiffen them. The goods are covered with spots, which, when examined through a microscope, present the same fungus that is found in the diseased potato.

AN ADMIRABLE CURE FOR THE TOOTHACHE.—A small piece of Radix pyrerethæ (Spanish root) placed upon the gum, or a piece of cotton steeped in an extract of the same root and similarly applied, completely removes this very annoying complaint.

FORMATION OF HUMUS,

OR WHAT IS CALLED VEGETABLE MOULD.

JOHN S. SKINNER, Esq. WINCHESTER, Va., May 14, 1848.

Dear Sir: I send you the facts which convinced me that "vegetable mould," "virgin earth," or "humus," as it is termed, is a change in the chemical qualities of the earth, caused by shade—having no necessary connection whatever with vegetable decomposition. First, a piece of meadow land which had been completelyexhausted by injudicious cultivation, was made quite as rich as river bottom, by permitting pure spring water to flow over it for a few years. Secondly, the spot from which an old building of any description has been removed is exceedingly fertile, and remains so for many years, although it may be cultivated in crops known to be the greatest exhausters of the soil. Thirdly, under plank, stone, logs, or any other substance which effectually shades the earth, we find the "vegetable mould" begins to form very soon, and progresses deeper and deeper precisely in proportion to the length of time the ground remains shaded. Fourthly, a field which is thickly covered with loose stone will produce fine crops of wheat or corn every year, although no manures or vegetable matter be returned to it. Fifthly, a single oak or other forest-tree will impoverish the land all around it; yet in our forests the trees grow luxuriantly, and leave the soil fertile beneath. This cannot be explained by the decomposition of the leaves, for it is well known that they are the most indifferent of all vegetable substances to convert into manure, and the least valuable when so converted; and "decayed vegetable fibre," or rather wood, is known to be destructive to vegetation of every description; besides, experience teaches us that we can make the trees grow and the soil fertile beneath by paving around the roots with stone, or any other indestructible substance. Sixthly, large masses of vegetable matters, when suffered to remain until completely decomposed, leave but a small residue, and we find large quantities of "vegetable mould," in caves and subterranean caverns, where vegetation cannot possibly exist.

If you think the interest of Agriculture will be promoted by publishing my communications, you will please do so; if not, you will do me the favor to *return them through the mail.*

Yours, very respectfully,
ROBERT BALDWIN.

NOTE ON THE ABOVE.

We might have suppressed the last words of the above, but that we choose to make them the subject of self-reproach and regret. Some time since we received and read with lively interest a paper from the same pen, on the *Action of Clover* as a fertilizer, ascribing its beneficial effects to its action in *shading the land*—but unfortunately, under peculiar circumstances producing some confusion and apparent neglect, we have *mislaid*, for the time being, that paper, and one of great interest from Mr. Devereux, of North Carolina, on the Culture and Value of *Pease* as a Fertilizer of Land, doing, in the South, the office performed by Clover in the North, with the addition of being of great value as food for hogs.

We still hope to recover these papers. Can we say as much in regard to our being excused by their authors?

We believe in the theory advanced by Dr. Baldwin, who is esteemed among the most zealous, observant, and scientific farmers of Virginia. Our recollection, very nearly as far back as it reaches, brings this corroboration of his remarks: The father of the Editor, FREDERICK SKINNER, of Calvert County, Maryland, is well remembered by the old people of the County as the introducer of almost everything new in the development of agricultural products, machinery and manures. From him—his conversations, course of reading and inquiries—we imbibed our insatiable passion for the pursuit, and we recollect noticing, when

yet a small boy, that he had always had the poorest spots on adjoining high land chosen for curing and stacking his low-land meadow hay; and when that hay was removed—say the next spring or summer—these *poor spots* were always among the most fertile on the farm. It is to its action in *shading* the soil that Doctor Baldwin, as we have said, contends is to be attributed its fertilizing influence. Let any poor spot or galded knoll be covered with bushes of any kind, and see how rank the grass will grow up among them, and how soon the land is restored. The subject is worthy of particular attention. Let our Societies or Institutes cause poor soil which has been thus covered, merely, without any application of manure, to be *analyzed*, and see what are the properties so soon acquired by protection, perhaps from *cold* as well as from the rays of the sun. For what more useful purposes are such institutions organized and supported by the public?

SOUTHERN RAILROADS.

We subjoin a statement of the principal railroads in the Southern States, together with the cost of travel on each. Several works are in progress which will materially extend the lines. When these are accomplished, we shall endeavor to exhibit the cost and dividends, as well as other specific information concerning all:

Companies.	Miles.	Fare.
IN ALABAMA.		
Montgomery and West Point	60	$3 00
IN GEORGIA.		
Western and Atlantic (State)	100	5 00
Georgia	171	7 00
Central	191	7 00
Macon Western	101	4 00
Total length	563	
IN SOUTH CAROLINA.		
South Carolina	136	6 75
Columbia	68	3 38
Total length	204	
IN NORTH CAROLINA.		
Wilmington and Weldon	161	$5 00
Gaston and Raleigh	87	4 00
Total length	248	
IN VIRGINIA.		
Petersburg and Roanoke	63	3 00
Richmond and Petersburg	22	1 00
Richmond, Fredericksburg and Potomac	133	5 50
Winchester and Potomac	32	2 00
Louisa	50	4 00
Total length	300	

There is no reason why the stock of Southern railways should not be profitable. As a specimen, we take the Report of the President of the Petersburg Railroad Company, for the year ending 30th September last:

Total receipts for passengers and freight	$179,867 94
Expenses of every kind, repairs, &c	73,637 13
Income after payment of expenses	$106,230 81

The cost of the road was $801,611 52; the dividend, therefore, is a fraction over thirteen per cent.

In his late Report, the President of the South Carolina Railroad Company sums up the operations of the year:

Gross receipts from 1st January to 30th December, 1847	$655,575 30
Current expenses in same period	303,480 40
Net revenue	$352,094 90

[De Bow's Commercial Review.

Rose Bugs and Potato Bugs.—Take fresh, dry, burnt wood-ashes and sprinkle over the potato-tops or rose-bushes (or other shrubs and vines) as soon as the bugs appear pretty numerous, and they will soon leave. We have tried this effectually, and it may be relied on. Before we discovered the remedy, which was made known to us by our hired man,) we took from one to two handsfull of rose bugs from a single bush—according to size.

[Prairie Farmer.

LETTER XVII.

SHEEP-DOGS, WOOL DEPOTS, &c.

The estimation in which dogs have been held by different nations, &c...The Sheep-Dog—Buffon's description of him...The Spanish Sheep-Dog—Origin—Introduction into the United States—Value—Arrogante—his history...The Hungarian Sheep-Dog—Mr. Paget's description of—probable origin—The Mexican Sheep-Dog—Mr. Lyman's description of—Mr. Kendall's...South American Sheep-Dogs—Darwin's description of...The English Sheep-Dog—Mr. Gates's description of...Mr. Colman's...The Scotch Sheep-Dog—Mr. Hogg's account of..Mr. Peters's...Necessity of accustoming Sheep to a dog...Wool Depots—Mr. Blanchard's account of their origin—Letter from Mr. Peters, describing their object, methods of doing business, and advantages—Utility of these depots—their especial utility to the South...A correction—Mr. Ruffin...Note in relation to Australia—Statistics of its Wool Trade brought down to 1846.

Dear Sir:—In all ages of the world, and among nearly all nations, savage and civilized,* the dog has been the friend and cherished companion of man. The Egyptians placed him among their gods. The Greeks held him in the highest estimation. His figure mingles with that of warriors and demi-gods on their friezes; and Argus, the dog of Ulysses, lives as immortal in the Odyssey, (*vide Book XVII., p.* 344 *to* 400) as his sagacious master, or the faithful Penelope. Alexander the Great founded a city in honor of a dog! The Romans treated him with similar respect. His skin covered the statues of the sacred Lares; his figure, as the emblem of care and vigilance, stood at the feet of these household gods—venerated and loved as the tutelary manes of departed ancestors. Horace in his Ode to Cassius Severus (*Book V., Ode VI.*,) compares himself to the Molossian, or the tawny Spartan dog, which defends the flocks, and with ears erect, pursues the wild beast through the deep snows. Virgil, in the delightful Georgics, admonishes the Roman shepherds not to neglect the care of their dogs:

"Nec tibi cura canum fuerit postrema: sed unà
Veloces Spartæ catulos, acremque Molossum,
Pasce sero pingui: nunquam, custodibus illis,
Nocturnum stabulis furem, incursusque luporum,
Aut impacatos à tergo horrebis Iberos."

[*Georg. Liber III., commencing at line* 404.

Thus translated by Sotheby:

Nor slight thy dogs; on whey the mastiffs feed,
Molossian race, and hounds of Spartan breed;
Beneath their care, nor wolves, nor thieves by night,
Nor wild Iberian shall thy fear excite.

These "Spartan hounds," I may remark, par parenthesis, are the ones spoken of by Shakspeare, in that glorious description of the music of a pack in full cry, and of the points of a hound, in *Midsummer-Night's Dream:*

Hippolita.—I was with Hercules, and Cadmus, once,
When in a wood of Crete they bayed the bear
With hounds of Sparta: never did I hear
Such gallant chiding; for, besides the groves,
The skies, the fountains, every region near
Seemed all one mutual cry: I never heard
So musical a discord, such sweet thunder.

Theseus.—My hounds are bred out of the Spartan kind,
So flewed, so sanded; and their heads are hung
With ears that sweep away the morning dew;
Crook-kneed, and dew-lapped, like Thessalian bulls;
Slow in pursuit, but matched in mouth like bells,
Each under each. A cry more tunable
Was never hallo'd to, nor cheered with horn,
In Crete, in Sparta, nor in Thessaly.

* The only exceptions which now occur to me are the Jews, the Hindoos, and the Mahommedan nations and tribes.

Arrian, Pliny, Oppian, Ælian, and a host of other writers of the Empire, descant on the praises of the dog, or give anecdotes of his courage, strength, and fidelity.

In the chivalric ages, he was the companion of knights and princes—the soul of the manly field-sports of those times. Even prelates followed him to the chase. The abbots of St. Hubert *bred* a celebrated race of hounds. St. Hubert himself, St. Eustace, and many others on the canonized calendar, were keen hunters. "*Whereupon,*" says the author of the "Noble Art of Venerie," &c., published in 1611, "*we may conceive that (by the grace of God) all good huntsmen shall follow them into Paradise!*" Truly, a consoling religious *sequitur!*

Scott, in his beautifully descriptive poetry, and still more poetical prose, has given us a whole picture gallery of dogs, from the Middle Ages down. The few which start up first in memory, (in *my* memory,) because, probably, linked with the most interesting associations, are Fangs—a genuine Saxon—gaunt and unkempt, but stanch as his master, Gurth, the son of Beowulph; the noble hound of Sir Kenneth; the "two dogs of black Saint Hubert's breed," that with Fitz-James pursued their quarry into the wild pass of the Trosachs; the faithful little terrier, which,

> ——"on the dark brow of the mighty Hellvellyn,
> The much-loved remains of her master defended,
> And chased the hill fox and the raven away;"

and last, not least, Hector McIntyre's bitch Juno, which stole the butter, and broke the "lachramatory from Clochmaben," of the glorious old Antiquary. They stand out on the canvas like Landseer's pictures. We pause to hear them *bark!* It has often occurred to me that Scott omitted a fine opportunity, indeed, made a *hiatus vale deflendus*, in not introducing one or more of the Alpine spaniels—or dogs of Mount St. Bernard—into his Anne of Geierstein, providing it could be done, (on which point I am uninstructed,) without a violent anachronism. When Arthur clung dizzy and stupefied to the trunk of the tree which hung over the beetling verge of the precipice—when the cry of the Swiss maiden announced approaching succor, should it not have had for its accompaniment the baying of one of those great dogs of the Alps—the deep and far-heard reverberations of which so often calls help to the perishing traveler, for miles, through the howling storm? Should not the dog of Donnerhugel, on the night-watch of Graffs-lust, have been of the same breed—huge, shaggy, and daring as himself? The portrait of Barry, a Bernardine dog which saved the lives of forty persons, and finally perished in an avalanche in guiding some travelers to St. Pierre, is to be found in every print-shop. It represents him carrying a child on his shoulders—clinging by his shaggy hair,—which he found in the Glacier of Balsore, and rescued from approaching death.

Scott is not the only modern poet who has admired and sung the praises of the dog. And I do not recollect the instance of one, who has mentioned him, that is, the *well-bred* dog, who has not praised him, except Byron in these moody lines:

> "Perchance my dog will whine in vain,
> Till fed by stranger hands;
> But long ere I come back again
> Would tear me where he stands."

In his epitaph on his Newfoundland dog, the noble poet retracted this ungenerous libel, and pays one of the warmest tributes to the fidelity of the dog, on record.

Volumes of anecdotes of canine sagacity might be easily compiled.

Reasoning powers the dog undoubtedly possesses, quite on a par with ordinary humanity, if we may believe scores of these writers. But it is probable that the grandsires of some of them "drew good *long-bows* at Hastings," and they, like Hubert, may lay claim to a hereditary knowledge of the weapon. It is to be feared that dog-stories will soon be sunk to a par with *fish-stories!* The truth is, the dog knows enough, and there are authenticated cases enough of his wonderful sagacity, without having an air of discredit thrown over the whole of them, by fanciful exaggerations.

The comparative intelligence, and the comparative value to man, of the different species of the dog, would be very differently estimated by those who have been placed in situations to be particularly benefited by the peculiar instincts of this race or that. Nearly every species has some traits, some uses, where it is unequaled by the others; and each in its place is valuable. I do not, however, mean these remarks, or any others which I have made in favor of the dog, to apply to the mongrel tribe of curs. That there have been valuable individuals from this disreputable stock, all must admit; but the miserable, cowardly and thievish character of the mass of them has been proverbial in all time. Far too many of them are kept by our farmers in the place of noble and serviceable animals and multitudes of them, owned by idlers and vagabonds, infest the country and do ten times more mischief to our flocks than diseases and beasts of prey.

THE SHEEP-DOG.—Buffon thus eloquently describes the sheep-dog,* and compares his sagacity and value to man, with other races†:

"This animal, faithful to Man, will always preserve a portion of his empire and a degree of superiority over other beings. He reigns at the head of his flock, and makes himself better understood than the voice of the shepherd. Safety, order, and discipline are the fruits of his vigilance and animal. They are a people submitted to his management, whom he conducts and protects, and against whom he never applies force but for the preservation of good order. . . . If we consider that this animal, notwithstanding his ugliness, and his wild and melancholy look, is superior in instinct to all others; that he has a decided character in which education has comparatively little share; that he is the only animal born perfectly trained for the service of others; that, guided by natural powers alone, he applies himself to the care of our flocks, a duty which he executes with singular assiduity, vigilance, and fidelity; that he conducts them with an admirable intelligence, which is a part and portion of himself; that his sagacity astonishes at the same time that it gives repose to his master, while it requires great time and trouble to instruct other dogs for the purposes to which they are destined; if we reflect on these facts, we shall be confirmed in the opinion that the shepherd's dog is the true dog of Nature, the stock and model of the whole species."

I shall call attention to but a few of the most distinguished varieties of the sheep-dog.

THE SPANISH SHEEP-DOG.—Of the origin of this celebrated race, I do not recollect to have seen anything. I have observed them several times spoken of, latterly, in newspapers and agricultural publications, as the same variety with the Alpine Spaniel, or Bernardine dog. This, I think, must be an error, though there may be a general resemblance between the two species. Arrogante, on the next page, though a dog of prodigious power, decidedly lacks the massive proportions, both in body and limbs, of several Bernardine dogs, which I have seen, of unquestiona-

---

* I stated near the close of Letter V. that there are no shepherd dogs large and powerful enough to encounter and kill wolves and vagrant dogs, except the great Sheep-dog of Spain, and that he is so ferocious that he might frequently bring his owner into difficulty, and even endanger human life.—I was mistaken. Crosses between this and other species seems to have mitigated the ferocity of the Spanish dog, and still left it within the power of two to overcome a wolf, as will appear from what follows.

† Buffon's Natural History, vol. v., pp. 306, 318.

ble lineage. The *temper* and disposition of the two species, too, seems to me to be essentially different.

Mr. Trimmer, and various other foreign writers, speak in warm terms of the value of the Spanish sheep-dog, for guarding the migratory flocks of that country from the attacks of wolves—staying behind to protect feeble and lagging sheep, &c. In the Memoirs of the Pennsylvania Agricultural Society, there is a communication from the well-known John Hare Powell, Esq., of Philadelphia, from which the following are extracts:—

"The first importations of Merino sheep were accompanied by some of the large and powerful dogs of Spain, possessing all the valuable characteristics of the English shepherd's dog, with sagacity, fidelity and strength peculiar to themselves. . . . . Their ferocity, when aroused by any intruder, their attachment to their own flock, and devotion to their master, would, in the uncultivated parts of America, make them an acquisition of infinite value, by affording a defence against wolves, which they readily kill, and vagrant cur dogs, by which our flocks are often destroyed. The force of their instinctive attachment to sheep, and their resolution in attacking every dog which passes near to their charge, have been forcibly evinced upon my farm."

Fig. 71.

ARROGANTE—A SPANISH SHEEP-DOG.

Arrogante, whose portrait is above given with admirable fidelity, was imported from Spain with a flock of Merinos, a number of years since, by a gentleman residing near Bristol, England. His subsequent owner, Francis Rotch, Esq., of this State, thus describes him in a letter to me, which, though not intended for publication, I will venture to make a few extracts from:

"I have, as you desired, made you a sketch of the Spanish sheep-dog Arrogante, and a villainous looking rascal he is. A worse countenance I hardly ever saw on a dog! His small blood-shot eyes, set close together, give him that sinister, wolfish look, which is most unattractive; but his countenance is indicative of his character. There was nothing affectionate or joyous about him. He never forgave an injury or an insult: offend him, and it was for life. I have often been struck with his resemblance to his nation. He was proud and reserved in the extreme, but not quarrelsome. Every little cur would fly out at him, as at some strange animal; and I have seen them fasten for a moment on his heavy, bushy tail, and yet he would stride on, never breaking his long, 'loping,' shambling trot. Once I saw him

turn, and the retribution was awful! It was upon a large, powerful mastiff we kept as a night-guard in the Bank. He then put forth his strength, which proved tremendous! His coat hung about him in thick, loose, matted folds, dirty and uncared-for,—so that I presume a dog never got hold of anything about him deeper than his thick, tough skin, which was twice too large to fit him anywhere, and especially around the neck and shoulders. The only other evidence of his uncommon strength which I had observed, was the perfect ease with which he threw himself over a high wall or paling, which often drew my attention, because he seemed to me wanting in that particular physical development which we are accustomed to consider as necessary to muscular power. He was flat-chested, and flat-sided, with a somewhat long back and narrow loin. (My drawing foreshortens his length.) His neck, forearm and thigh certainly indicated strength. If the Spanish wolf and the dog ever cohabit, he most assuredly had in him such a cross; the very effluvia of the animal betrayed it. In all in which he differed from the beautiful Spanish shepherd-dog, he was wolfish both in form and habits.* But, though no parlor beauty, Arrogante was unquestionably a dog of immense value to the mountain-shepherd. Several times, he had met the large wolf of the Appenines, and without aid slain his antagonist. The shepherds who bred him said it was an affair of no doubtful issue, when he encountered a wolf single-handed. His history, after reaching England, you know."

Some portions of that history I cannot resist the temptation of narrating, as illustrative of the character of this interesting breed, and commemorative of the virtues of the stern, but honest and dauntless Arrogante. If his courage was tinctured with ferocity, and sometimes instigated by a revenge, going a little beyond the canon which permits bad debts to be paid in kind, he did everything *openly!* He made no sneakish, cur-like attacks, on the heels of his foe. By him, as by Robin Hood and his merry men—commemorated by Drayton—

"Who struck below the knee [was] not counted then a man;"

and his spring was always at the *throat* of his quarry. But he made not that deadly spring until he gave "warning fair and true," and never without provocation.†

Soon after Arrogante's arrival in England, a ewe under his charge chanced to get cast in a ditch, during the temporary absence of the Spanish shepherd who had accompanied the flock and dog at their importation. An English shepherd, in a spirit of vaunting, insisted on relieving the fallen sheep, in preference to having the absent shepherd called, though warned by his companions to desist. The stern stranger dog met him at the gate and also warned him with sullen growls, growing more menacing as he approached the sheep. The shepherd was a powerful and bold man, and felt that it was too late now to retract with credit. On reaching the sheep, he bent carefully forward, with his eyes on the dog, which instantly made a spring at his throat. A quick forward movement of his arm saved his throat, but the arm was so dreadfully lacerated that immediate amputation became necessary. To save the dog, which had but done his duty, *as he had been taught it*, from the popular excitement, he was shipped in a vessel which sailed that very afternoon, from Bristol for America. He was sent to Francis Rotch, Esq., then a resident of New-Bedford.

For a long time Arrogante would not pay the least attention to his new master; the voice of the latter would scarcely arrest him for a moment. After attempting in vain, for several weeks, to obtain some recognition of mastership from him, Mr. Rotch chained him securely to a tree, punished him severely, and then, with not a few misgivings, released him. But he submitted, for he well knew that the punishment came from his master, and afterward gave a cold, haughty obedience to all required of him.

* I never have supposed, from the several conversations which I have had with Mr. Rotch on the subject, that Arrogante was anything less than a thorough-bred Spanish shepherd-dog. Mr. Rotch here means that he was an ill-favored individual of the family—and he thinks that this *may* be owing to a bar-sinister on his escutcheon, left there by some wolfish gallant. His temper was even *less ferocious* than Mr. Powell describes that of *his* Spanish dogs.

† Was there anything *wolf-like* in all of this?

Stupid and apparently sleeping much of the day, nothing, however, escaped his observation, or was subsequently erased from his memory. If led round a building, or enclosure, or even an open space, at night-fall, in a manner to evince particular design, during the entire night like a sentinel he traversed some part of the guarded ring, permitting neither man nor beast to pass *in* or *out* from it.

Arrogante was a "temperance man," of the straightest sect—an out-and-out *teetotaler*—and if tolerant of deviations from his *creed*, he could bear none, from the sobriety of his *practice*. Never would he confess acquaintance with a drunken man—though the hand of that man fed him. The bailiff, who usually fed Arrogante, used occasionally to come home late in the evening a little "*fou*," and never could he in this condition get his foot on the premises! The old man has plead guilty to more than one night's lodgings on the ground, in consequence of Arrogante's temperance scruples.

On one occasion a couple of sailors, to take advantage of the tide, came unexpectedly, and without giving any notice, on the farm, at 3 A. M., to take away some potatoes they had purchased. Arrogante thought it was not so "nominated in the bond;" he forced them to clamber into an empty cart, and there he kept them until morning. They tried the experiment of putting a leg over the side once or twice, but were admonished in too unequivocal a manner to keep quiet, to need any farther hints. They lost the tide, and were in great tribulation, but, like honest fellows, confessed the fault was their own.

I might, did limits allow, recount many more anecdotes displaying the iron determination and fixed precision with which this noble dog obeyed his instructions in guarding sheep or other property committed to his charge. He was a decided "strict constructionist," swerving not from the letter of his commission, and woe to him who attempted to countervail the tenor of that commission!

Drunkenness was destined to prove as fatal as it was detestable, to Arrogante. A gentleman occupied a cottage orné by the sea-side, the lane to which ran along the farm, and near the stable which Arrogante made his head-quarters, when not on particular duty. The gentleman was regularly *introduced* to him, and warned against ever provoking him. Returning him home late one Saturday evening on horseback, from a *convivial* meeting, as he galloped through the lane, he met the dog, and wantonly struck him or struck at him with a hunting-whip. He was a large man, and rode a tall, powerful horse, and being under speed, he escaped before the astonished dog recovered from his surprise. But the insulted blood of Castile rushed in boiling currents through the veins of the maddened Arrogante. He felt, like his countryman De Lerma, in Epes Sargent's tragedy of Velasco—

> "Struck like a menial! buffeted! degraded!
> Spare not my life, if mercy thou would show,
> Thou givest me back only what thou hast made
> A burden, a disgrace, a misery!"

But Arrogante felt both the power and will to avenge himself, and he resolved on a bloody retribution.

The next morning the gentleman was on his way to church, mounted as before. The dog heard and knew the tread of his horse, rose from his lair in the stable, walked to the road-side, and stood grimly awaiting his insulter. When the latter had approached within a few yards, Arrogante, like a missile projected from a catapult, met him *in the air*, in a deadly spring at his throat. The sudden jump and swerve of the frightened and

very active horse, saved the rider's throat and his life—but so narrowly had he escaped, that he felt the gnashing teeth of the frenzied brute *scrape down* his dress, where they came in contact with and closed upon his watch, tearing it away with the adjacent clothing. The horseman fled for his life, while the baffled dog vented his rage on the gold watch which he had captured, by chewing it *into atoms!* The cause of this terrible onset not being disclosed at the time, Mr. R., though convinced from the character of the dog that he had not been the aggressor, felt constrained to give orders to have him shot.

—

THE HUNGARIAN SHEEP-DOG.—The following description of the Hungarian Sheep-Dog, occurs in Paget's "Hungary and Transylvania:"*

"It would be unjust to quit the subject of the Puszta Shepherd without making due and honorable mention of his constant companion and friend, the juhász-hutya—the Hungarian shepherd dog. The shepherd dog is commonly white, sometimes inclined to a reddish brown, and about the size of our Newfoundland dog. His sharp nose, short erect ears, shaggy coat, and bushy tail give him much the appearance of a wolf; indeed, so great is the resemblance, that I have known a Hungarian gentleman mistake a wolf for one of his own dogs. Except to their masters, they are so savage that it is unsafe for a stranger to enter the court-yard of a Hungarian cottage, without arms. I speak from experience; for as I was walking through the yard of a post-house, where some of these dogs were lying about, apparently asleep, one of them crept after me, and inflicted a severe wound on my leg, of which I still bear the marks. Before I could turn round, the dog was already far off; for, like the wolf, they bite by snapping, but never hang to the object like the bull-dog or mastiff. Their sagacity in driving and guarding the sheep and cattle, and their courage in protecting them from wolves and robbers, are highly praised; and the shepherd is so well aware of the value of a good one, that it is difficult to induce him to part with it."

I have little doubt that the Hungarian dogs above described are the descendants of the Spanish ones, introduced into Hungary with the Merino sheep, though possibly they may be somewhat crossed by interbreeding with the dogs of the country.

—

THE MEXICAN SHEEP-DOG.—The following acccount of these noble dogs appears as a communication from Mr. J. H. Lyman, in the third volume of the American Agriculturist:†

"Although Mr. Kendall and some other writers have described this wonderful animal as a cross of the Newfoundland dog, such, I think, cannot be the fact; on the contrary, I have no doubt he is a genuine descendant of the Alpine mastiff, or more properly, Spanish shepherd dog introduced by them at the time of the Conquest. He is only to be found in the sheep-raising districts of New Mexico. The other Mexican dogs, which number more than a thousand to one of these noble animals, are the results of a cross of everything under the sun having any affinity to the canine race, and even of a still nobler class of animals if Mexican stories are to be credited. It is believed in Mexico, that the countless mongrels of that country owe their origin to the assistance of the various kinds of wolves, mountain cats, lynxes, and to almost if not every class of four-footed carnivorous animals. Be this as it may, those who have not seen them can believe as much as they like; but eye-witnesses can assert, that there never was a country *blessed* with a greater and more abundant variety of miserarable, snarling, cowardly packs, than the mongrel dogs of Mexico. That country of a surety would be the plague-spot of this beautiful world, were it not for the redeeming character of the truly noble shepherd dog, endowed as it is with almost human intellect. I have often thought, when observing the sagacity of this animal, that if very many of the human race possessed one half of the power of inductive reasoning which *seems* to be the gift of this animal, that it would be far better for themselves and for their fellow-creatures.

The peculiar education of these dogs is one of the most important and interesting steps pursued by the shepherd. His method is to select from a multitude of pups a few of the healthiest and finest-looking, and to put them to a sucking ewe, first depriving her of her own lamb. By force, as well as from a natural desire she has to be relieved of the contents of her udder, she soon learns to look upon the little interlopers with all the affection she would manifest for her own natural offspring. For the first few days the pups are kept in the hut, the ewe suckling them morning and evening only; but gradually, as she be-

* Hungary and Transylvania, by John Paget, Esq., vol. ii., p. 12, *et supra.* † Page 241.

comes accustomed to their sight, she is allowed to run in a small enclosure with them until she becomes so perfectly familiar with their appearance as to take the entire charge of them. After this they are folded with the whole flock for a fortnight or so, they then run about during the day with the flock, which after a while becomes so accustomed to them, as to be able to distinguish them from other dogs—even from those of the same litter which have not been nursed among them. The shepherds usually allow the slut to keep one of a litter for her own particular benefit; the balance are generally destroyed.

After the pups are weaned, they never leave the particular drove among which they have been reared. Not even the voice of their master can entice them beyond sight of the flock; neither hunger or thirst can do it. I have been credibly informed of an instance where a single dog having charge of a small flock of sheep, was allowed to wander with them about the mountains, while the shepherd returned to his village for a few days, having perfect confidence in the ability of his dog to look after the flock during his absence, but with a strange want of foresight as to the provision of the dog for his food. Upon his return to the flock, he found it several miles from where left, but *on the road leading to the village*, and the poor faithful animal in the agonies of death, dying of *starvation*, even in the midst *of plenty*; yet the flock had not been harmed by him. A reciprocal affection exists between them which may put to blush many of the human family. The poor dog recognized them only as brothers and dearly loved friends; he was ready at all times to lay down his life for them; to attack not only wolves and mountain cats, with the confidence of victory, but even the bear, when there could be no hope. Of late years, when the shepherds of New Mexico have suffered so much from Indian marauders, instances have frequently occurred where the dog has not hesitated to attack his human foes, and although transfixed with arrows, his indomitable courage and faithfulness have been such as to compel his assailants to pin him to the earth with spears, and hold him there until dispatched with stones.

In the above instance the starving dog could have helped himself to one of his *little brother* lambs, or could have deserted the sheep, and very soon have reached the settlements where there was food for him. But faithful even unto death, he would neither leave nor molest them, but followed the promptings of his instinct to lead into the settlement; their unconsciousness of his wants and slow motions in traveling were too much for his exhausting strength.

These shepherds are very nomadic in character. They are constantly moving about, their camp equipage consisting merely of a kettle and a bag of meal; their lodges are made in a few minutes, of branches, &c., thrown against cross-sticks. They very seldom go out in the day-time with their flocks, intrusting them entirely with their dogs, which faithfully return them at night, never permitting any stragglers behind or lost. Sometimes different flocks *are* brought into the same neighborhood owing to scarcity of grass, when the wonderful instincts of the shepherds' dogs are most beautifully displayed; and to my astonishment, who have been an eye-witness of such scenes, if two flocks approach within a few yards of each other, their respective proprietors will place themselves in the space between them, and as is very naturally the case, if any adventurous sheep should endeavor to cross over to visit her neighbors, her dog protector kindly but firmly leads her back, and it sometimes happens, if many make a rush and succeed in joining the other flock, the dogs under whose charge they are, go over and bring them all out, but, strange to say, under such circumstances they *are never opposed by the other dogs*. They approach the strange sheep only to prevent their own from leaving the flock, though they offer no assistance in expelling the other sheep. But they *never permit* sheep not under canine protection, nor dogs not in charge of sheep, to approach them. Even the same dogs which are so freely permitted to enter their flocks in search of their own, are driven away with ignominy if they presume to approach them without that laudable object in view.

Many anecdotes could be related of the wonderful instinct of these dogs. I very much doubt if there are shepherd dogs in any other part of the world except Spain, equal to those of New-Mexico in value. The famed Scotch and English dogs sink into insignificance by the side of them. Their superiority may be owing to the peculiar mode of rearing them, but they are certainly very noble animals, naturally of large size, and highly deserving to be introduced into the United States. A pair of them will easily kill a wolf, and flocks under their care need not fear any common enemy to be found in our country.

J. H. LYMAN."

Mr. Kendall* speaks of meeting, on the Grand Prairie,

—a flock numbering seventeen thousand, which immense herd was guarded by a very few men, assisted by a large number of noble dogs, which appeared gifted with the faculty of keeping them together. There was no running about, no barking or biting in their system of tactics; or the contrary, they were continually walking up and down, like faithful sentinels, on the outer side of the flock, and should any sheep chance to stray from its fellows, the dog on duty at that particular post, would walk gently up, take him carefully by the ear,

* Vol. I., p. 268.

and lead him back to the flock. Not the least fear did the sheep manifest at the approach of these dogs, and there was no occasion for it.

These noble animals seem, according to these and various other corresponding accounts I have seen of them, to leave nothing to desire in the way of a sheep-dog, either for guarding or managing flocks. They would be invaluable in our Southern States, to protect the flocks from the cur-dogs which so often attack them, and from the occasional wolves. I hope efforts will be made to introduce them into our country, and then they should be bred in the utmost purity.

—

South American Sheep-Dog.—Similar to the preceding in character and habits, are the sheep-dogs to be found in various parts of South America. They, too, are undoubtedly an offshoot from the Spanish stem. The following interesting account of them is from Darwin's Journal:

"While staying at this estancia (in Banda Oriental), I was amused with what I saw and heard of the shepherd dogs of the country. When riding, it is a common thing to meet a large flock of sheep guarded by one or two dogs, at the distance of some miles from any house or man. I often wondered how so firm a friendship had been established. The method of education consists in separating the puppy, when very young, from the bitch, and in accustoming it to its future companions. A ewe is held three or four times a day for the little thing to suck, and a nest of wool is made for it in the sheep-pen.—At no time is it allowed to associate with other dogs, or with the children of the family. The puppy, moreover, is generally castrated; so that when grown up, it can scarcely have any feelings in common with the rest of its kind. From this education it has no wish to leave the flock, and just as another dog will defend its master, man, so will these the sheep. It is amusing to observe, when approaching a flock, how the dog immediately advances barking—and the sheep all close in his rear as if round the oldest ram. These dogs are also easily taught to bring home the flock at a certain time in the evening. Their most troublesome fault when young is their desire of playing with the sheep, for in their play, they sometimes gallop their poor subjects most unmercifully. The shepherd dog comes to the house every day for some meat, and immediately it is given to him he skulks away as if ashamed of himself. On these occasions the house dogs are very tyrannical, and the least of them will attack and pursue the stranger. The minute, however, the latter has reached the flock, he turns round and begins to bark, and then all the house dogs take very quickly to their heels. In a similar manner a whole pack of hungry wild dogs will scarcely ever (and I was told by some, never), venture to attack a flock guarded even by one of these faithful shepherds. The whole account appears to me a curious instance of the pliability of the affections of the dog race; and yet, whether wild, or however educated, with a mutual feeling of respect and fear for those that are fulfilling their instinct of association. For we can understand on no principle the wild dogs being driven away by the single one with its flock, except that they consider, from some confused notion, that the one thus associated gains power, as if in company with its own kind. F. Cuvier has observed that all animals which enter into domestication consider Man as a member of their society, and thus they fulfil their instinct of association. In the above case the shepherd dogs rank the sheep as their brethren; and the wild dogs, though knowing that the individual sheep are not dogs, but are good to eat, yet partly consent to this view, when seeing them in a flock, with a shepherd dog at their head."

—

Other large races of Sheep-Dogs.—There are one or two fine species in France, as those of Brie, and Auvergne. In a letter from G. W. Lafayette, to John S. Skinner, Esq., the latter are pronounced equal to the Spanish dogs.* Large powerful races, everywhere possessing the same general characteristics, are to be found in almost every country excepting our own, where the fine-wooled breeds of sheep have been extensively introduced. With a commerce extending to all the maritime nations of the world, singular it is that so little pains have been taken to introduce them.

—

Thi[illegible]sh Sheep-Dog.—The following are portraits of a Drover's dog,

* See Fa[illegible]ibrary, Vol. i., p. 465.

and a Scotch Colley slut, imported by B. Gates, of Gap Grove, Lee Co. Illinois. They are taken from The Farmers' Library.*

Fig. 72.

DROVER'S DOG, AND COLLEY SLUT.

The Drover's dog, or English sheep-dog, or Butcher's dog—for by all of these names is he known—is considerably smaller than the species or families heretofore described, but he is a larger and more powerful dog than the Colley. Mr. Gates, in the communication accompanying the portraits, remarks:

"Much has already been written on the intelligence of the Scotch Colley. My opinion is that the English "Butcher's dog" is no way lacking on that point. Any reader who has visited Smithfield market in London, on Monday or Friday, will, no doubt, have formed the same opinion. There you have an opportunity of seeing a number of these useful animals at their work. It would, in fact, be almost impossible to conduct this market without their aid. There a vast number of different animals are brought for sale from all parts of the country, to supply this great metropolis, and are collected in the smallest possible space. The difficulty of keeping them from mingling with others falls principally on the dog. If one slips away, or a particular one is wished to be caught, it is pointed out to him, and is returned back, or held till the owner takes it—the dog always holding them by the side of the head, so as not to bruise the body. By a word or motion of the hand, they will run over the backs of the sheep, to stop them or turn them in a different direction. I have often admired, with astonishment, their quick and intelligent actions. They appear to read the thoughts of their master by his countenance, for their eye is continually on his, or the flock. Nothing else can attract his attention when he has work to perform, and at times I have thought he acted with more judgment than the owner. . . . The breed of "Boxer," (whose portrait is above given,) is sometimes called the Drover's or Tailless breed."

Mr. Colman, in one of his Reports, says:

"For a week or more before the tryst, the roads leading to Falkink will be found crowded with successive droves of cattle and sheep, proceeding to this central point; and it is extremely curious on the field to see with what skill and care the different parties and herds are kept together by themselves. In this matter the shepherds are generally assisted by

* Vol. i., p. 575.

their dogs, which appear endowed with a sagacity almost human, and almost to know every individual belonging to their charge. They are sure, with an inflexible pertinacity, to bring back a deserter to the flock."

Mr. T. C. Peters, (now of Buffalo, N. Y.,) on his return from Europe, a few years since, brought over a Drover and a Colley. His testimony to their extraordinary value will be found in the American Agriculturist, vol. iii., page 76.

Fig. 73.

THE COLLEY.

THE SCOTCH SHEEP-DOG OR COLLEY.—The light, active, sagacious Colley admits of no superior—scarcely of an equal—where it is his business merely to manage his flock, and not to defend them from beasts larger than himself. Mr. Hogg says that "a single shepherd and his dog will accomplish more in gathering a flock of sheep from a Highland farm than twenty shepherds could do without dogs. Neither hunger, fatigue, nor the worst treatment will drive him from his master's side, and he will follow him through every hardship without murmur or repining."

The same well-known writer, in a letter in Blackwood's Magazine, gives a most glowing description of the qualities of his Colley, "Sirrah." One night a flock of lambs, under his care, frightened at something, made what we call in America a regular *stampede*, scattering over the hills in several different bodies, "Sirrah," exclaimed Hogg in despair, "they're a' awa!" The dog dashed off through the darkness. After spending, with his assistants, the whole night in a fruitless search after the fugitives, Mr. Hogg commenced his return to his master's house. Coming to a deep ravine, they found Sirrah in charge, as they at first supposed, of one of the scattered divisions, but what was their joyful surprise to find that not a lamb of the whole flock was missing!

Of the stanch devotedness of the Colley, under any and all circum-

stance, Mr. Peters gives, in the American Agriculturist, the following characteristic illustration, copied from a Scotch paper:

"The master of the bitch purchased at a fair some eighty sheep, and having occasion to stay a day longer, sent them forward and directed his faithful Colley to drive them home, a distance of about 17 miles. The poor bitch, when a few miles on the road, dropped two whelps; but faithful to her charge, she drove the sheep on a mile or two farther—then allowing them to stop, she returned for her pups, which she carried some two miles in advance of the sheep, and thus she continued to do, alternately carrying her own young ones, and taking charge of the flock, till she reached home. The manner of her acting on this occasion was gathered by the shepherd from various persons who had observed her on the road."

The Colleys are not now uncommon in the Northern States, and I have often seen proofs of their singular sagacity in collecting, driving, and guarding sheep, and in catching out one from the flock when directed by their masters. I have often seen one drive a flock of fifty or sixty sheep through a crowed street, encountering teams, pedestrians, and other dogs at every step—without the slightest assistance.

Accustoming the Sheep to the Dog.—It is a mistake to suppose that a trained sheep-dog will manage any strange flock, however wild and unaccustomed to such company. The sheep must be gradually made acquainted with, and accustomed to the dog. They must know—and they will readily learn it—that he is their friend, their guardian and protector, instead of that hereditary enemy which their instinct teaches them to fly from. A want of knowledge of this fact has frequently led to disappointment and disgust, to a giving up of the valuable dog which it has cost pains and money to procure. Mr. Skinner relates a ludicrous incident of Mr. Jefferson, arising from his not being apprized of this fact. A thoroughly broken sheep-dog had been sent him from abroad, and the great Sage of Monticello, after having held forth *ore rotundo* to some visitors, on the value of these dogs, and their immense convenience—nay, their indispensability in managing flocks, led forth his guests to give a practical exemplification of the qualities of his dog. At the word, the latter made for the sheep. The terrified animals fled in all directions, some of them dashing themselves over precipices and breaking their necks. The dog either shared the same fate, or, mortified at his failure, felt his pride too deeply wounded to return. Mr. Jefferson never recovered him!

WOOL DEPOTS.

Commission merchants who confine their operations exclusively to the sale of Wool, have opened large stores or "Dépôts," at three or four points in the Northern States. Of the origin of this system, Mr. H. Blanchard, of Kinderhook, N. Y., thus spoke at the Agricultural meeting at the Assembly Chamber, Albany, Feb. 3, 1848:

"From facts that were ascertained by Hon. J. P. Beekman, (then President of the N. Y. State Agricultural Society,) at the State Fair held in Poughkeepsie, in 1844, he became convinced that the growers of Dutchess county, by reason of the superior facilities afforded them for the sale of their fine wools, were procuring from six to eight cents per pound more than many wool-growers in other sections of the State who produced the same quality of wool. The large quantity of fine wool grown in that county, offered great inducements for manufacturers and purchasers of fine wool to make that a place of resort to obtain their supplies, and thus a fair competition was awakened, which resulted in a just appreciation of the relative value of their wools, and remunerating prices to the fine wool grower. Soon after Dr. B.'s return, the evils consequent upon the system of selling wools in our county, as well as elsewhere, became a matter of discussion between him and other wool-growers in our vicinity and myself, the result of which was a request from them that I would open what we now term a "Wool Dépôt." The *principles* involved in the dépôt system are not new, it being conducted upon those of a commission business; but it is only the details and appli-

cation of these principles to wool when received direct from the grower, that had never before in this country been applied in the same discriminating manner, and with as little expense as by this system."

The objects and advantages of the system, and the method of conducting these establishments are clearly set forth in the following letter from my friend Mr. Peters, to whom, as a keeper of one of these Dépôts, and a gentleman of conceded ability—as well as skill, energy and success in this and in his other business operations—I thought it appropriate to apply for this information.

H. S. RANDALL, Esq. BUFFALO, N. Y., Dec. 16, 1847.

My Dear Sir: Your kind favor of the 12th inst., making inquiries relative to the Wool Dépôt system, is before me.

It will give me pleasure to answer your queries, not that by so doing I can add anything to the exceeding great value of your Letters to the whole country, and especially to the South and West—yet from my own experience as a wool-grower, and in the management of a Wool Dépôt which I established at this place last spring, I may give some information that will be useful to your readers, and may they be millions. In so doing, I will give you 1st, An account of the object; 2d, The method of doing business; and 3d, The advantages of the Wool Dépôt system.

THE OBJECT.—Upon no sheep is the wool exactly alike over the whole body; nor is the wool exactly alike upon any single flock. In most flocks there is a great diversity—greater than there should be for the farmer's profit. There is, then, a variety of grades of wool in every flock, and in every section of the country where wool is grown.

Manufacturers first grade the wool; that is, sort the fleeces, making from five to eight or nine different grades. Each fleece is then opened, and stapled, or sorted into the various grades of the factory. Some manufactories use only the finest, others only the coarsest, and others again use only one kind of the intermediate sorts, so that from a single flock, I sold this year wool to five different manufacturers, no one wanting or working the kind that the other wanted.

The object of the Wool Dépôt is to sort and arrange the wool, that the manufacturer can readily obtain the particular kind adapted to his machinery, and to obtain for each sort its fair market value.

METHOD OF DOING BUSINESS.—The system originated with Mr. H. Blanchard, at Kinderhook, some three years ago. Last year, we sent our wool to Mr. Blanchard, and during the winter I visited his establishment, and was so well satisfied with the operation of it, and of the vital importance of the system to the wool-growers everywhere, that I at once made arrangements to open one at this point. I accordingly commenced operations in the spring, and have been successful beyond my most sanguine expectations.

I have a competent and experienced sorter, and when wool is sent in, it is at once sorted in the fleece, each sort weighed, and entered in a book under the name of the person sending it.

I have adopted Mr. Blanchard's method of sorting, as experience has shown that to be the best, under all circumstances. I make, then, five sorts, taking full-blooded Merino for No. 1, and grading down to coarse common wool, which is No. 5. Saxony I grade into Extra, Prime 1, and Prime 2. Then there is a kind of wool which is admirable for combing, and another kind that is wanted for De Laines;—these form five more sorts, making thus ten sorts. But as there is such a difference in the condition of wool when brought into the Dépôt, I usually make two sorts of each number. Thus I have No. 2, and No. 2 A. No. 2 is usually good, but No. 2 A is of the same grade, but is in better condition, every way a choice article, but still not fine enough to go into a higher grade. The wool is actually worth two or three cents per lb. more than the other number to which it belongs, and but for making this distinction, would not bring its full value. When the wool is properly sorted, it is piled up in a manner that will enable the purchaser to see it at a good advantage;—insured, and held until the market requires it. I make all my sales here, and for cash. When the sales are closed, an account is made out and sent to those who have sent me their wool; usually, an account is rendered as fast as any part of a man's wool is sold. I have often been asked, how I could tell whether any man's wool was sold, unless the whole of a sort was sold at a time. It is very easy. Suppose A. has 100 lbs. of No. 1, and I have sold 20,000 lbs. out of 40,000 lbs.—that being the whole amount in the Dépôt. I have sold one-half of each man's No. 1, and I turn to A.'s account and give him credit for 50 lbs. sold, and so go through and credit each man with his proportion of that number sold.

The charges are, for receiving, sorting, and selling, one cent per lb., and the insurance—which is usually about 30 cts. on $100, for three months. Cartage from the dock is usually three cents per bale. The sacks are returned or sold at the option of the owner. They are

usually worth about fifty cents, more or less, according to their condition. Each man's wool is carefully examined; if put up in bad order, it is so noted, and a deduction made by the sorter, to make it as it should be. So that it is no object for a man to send to the Dépôt wool in a bad condition.

THE ADVANTAGES.—The foregoing facts would seem to be so plain that it cannot be necessary to refer to the advantages. No man, however, is more at the mercy of the speculator, than the wool-grower. The very fact that he has so many kinds of wool in his clip, prevents him from ascertaining the market value of the whole, for being in comparatively small quantities, he has not enough, if ever so well sorted, to make it an object for the different manufacturers to visit him. He is therefore compelled to sell his whole clip at the price of his present quality, and at prices from five to fifteen cents per lb. under the real market value of his wool. Allow me to illustrate by an example. A farmer has his wheat, corn, oats, and barley, all mixed, and carries it to market in this condition. Will anybody give him the value of each kind of grain? On the contrary, they would not be willing to pay even the value of the cheapest kind. And yet each kind by itself has a market value. Precisely in the same situation is the wool-grower, except that he has no means of knowing the value of the various sorts of wool, except from the speculator.

The advantage of the Dépôt system, then, is, that there his wool is properly sorted. The wheat is separated from the corn, the corn from the oats, and the oats from the barley, and each is made to bring its fair market value. By having an extensive correspondence among the manufacturers throughout the country, I am kept constantly advised of the market; and knowing the price of cloth in the cities, I am enabled to know to a certainty what the price of the various grades of wool should be.

When the manufacturer can get the kind of wool he wants, and in large quantities, he is willing to pay, and does pay a better price than when he has to buy that which he does not want, to get the right sort. It also equalizes the market, and brings the producer and the manufacturer together, without being compelled to pay agents or speculators, and prevents that fluctuation of the market which is always produced by speculation.

But there is another very great advantage growing out of the system. It enables the wool-growers in the various sections of the country to compare wool, and to know who has really the best and most profitable kinds of sheep. It has been strikingly manifest with me this season. For I have been enabled to point out to people in different States West, where they could find the most profitable sheep, by the wool which had been sent me. And in one instance men had been over five hundred miles after sheep, and paid high prices, when there were sheep in their own town worth double the money.

There is no difficulty in sending wool here from any part of the country bordering upon the Ohio, or its tributaries. The expense of transportation will range from one to one and a half cents per lb.—depending much upon the bargain made with the clipper. I have received wool this year from all the Western States, in some instances as far West as the Mississippi River, and the average cost for freight has been about one cent per lb.

It was urged by many last spring that this city was not a good point, inasmuch as it was not sufficiently central in its location. For nothing is more certain, than that a wool Dépôt, to be successful, must be so located as to command a large amount of wool. The larger amount you can concentrate at a point, the more rapid and sure will be your sales. To this city the products of the West naturally tend, and to this point the producer can calculate with great certainty when, and at what expense it will arrive. But after its trans-shipment here, expenses accumulate, without any corresponding benefit. And it is peculiarly so, in regard to wool, coming as it often does in bad order, sacks torn, broken, and wet.

But I have made my letter already longer than I intended, and in speaking of my own Dépôt have perhaps gone more into detail than is necessary.

This much I must be permitted to say to every wool-grower, that the Wool Dépôt system, properly conducted and patronized, is indispensable to ultimate and profitable success.

I remain, my dear sir,

Very sincerely yours,

T. C. PETERS.

Messrs. Perkins and Brown have a Dépôt at Springfield, Mass.; and I believe the establishment of two or three others is in contemplation, by companies or individuals.

Conducted with skill and fidelity, there can be but little doubt that these establishments are alike beneficial to the wool-grower and manufacturer. That Mr. Blanchard's and Mr. Peters's have thus far been so conducted, there is not the least doubt. Of the other I know nothing, though report speaks well of it. The design was not regarded with much favor, in the outset, by many of our most extensive wool-growers. They preferred to "do

their own business," and not "pay the wages of an intermediate agent." But the advantages derived from selling the wool in sorted lots, have been found to far more than overbalance the one cent per pound paid to the "agent" or Dépôt keeper, and the system is rapidly gaining favor. Many of our most experienced wool growers in this State—men the most competent to favorably dispose of their wool—have sent their wool to Messrs. Blanchard and Peters, and I have yet to see or hear of the first person who has been disappointed in the result.

If wool Dépôts are beneficial in the North, where the agents of different manufacturers, and "speculators," visit every man's barn to bid on his wool—and among a class of growers, too, who, from long experience, are familiar with the qualities and comparative values of the staple—how much more beneficial would they be to regions in which the growers are so scattered that they are rarely visited by traveling agents—or if so, not in numbers sufficient to produce that competition which would *compel* them to offer the fair market value of the article: and where, perhaps, in many cases, the growers themselves have not sufficient experience to determine the exact grade of their own clips, even supposing them correctly notified from time to time from abroad, of the market value of the several grades. *The Dépôt system, in my judgment, removes the great and only serious obstacle to successful wool-growing in the South.*

It is not necessary that Dépôts be established *in the Southern States*, to have those States reap the full benefit of the system. For the present, and for some time to come, at least, the North will furnish the *best home market* for fine wools. The wool therefore must, until some changes take place, come to the North before it is sold; and the transportation must be equally subtracted from the avails, whether the sale is effected at home or at a Northern wool Dépôt. Indeed, it would be *better* to store it in a Dépôt at Kinderhook or Buffalo, than at Charleston or Nashville. And this is for the reason that the two former are much nearer to, and can be more speedily visited by the principal woolen manufacturers of the United States, than the latter. The New-York or New-England manufacturer would be little likely to send an agent to Charleston or Nashville, if he could supply his wants equally cheaply (with the addition of cost of transportation), from Buffalo, Kinderhook, or Springfield. And if supplied any more cheaply at the former places (price of transportation excepted), be it remembered, it would be so much *unnecessarily taken out of the pocket* of the grower.

Should the South at any future day find it more for her interest to ship her wools to Europe, the above considerations will cease to be valid. She would then want Dépôts as much as now, for far more gain, proportionably, is made by *sorting wool* for the foreign, than the American markets. But in that event, the Dépôts would assume a different character, and they would be most appropriately located at the port whence the wools were shipped.

A CORRECTION.—MR. RUFFIN.

In the beginning of Letter VI., I made the following remark in relation to Hon. Edmund Ruffin—"He seems to think lime, of itself, adequate to the full and permanent amelioration of the tertiary soils."—This remark was made on a somewhat too hasty inspection of some of Mr. Ruffin's positions in the Agricultural Survey of South Carolina. Since writing it, I have had the pleasure of reading for the first time Mr. R.'s highly valuable work on Calcareous Manures, and find that I was in error in the statement above made.

NOTE IN RELATION TO AUSTRALIA.

Since the preceding Letters were completed, the exceedingly interesting article from the (English) Farmers' Magazine, which is published below, has met my eye. It will be seen from it that the conclusions arrived at by me (see page 123,) in relation to the vast increase in the trans-Atlantic demand for wool and woolens, are in a rapid course of verification. I wrote from statistics extending down to 1840. In that year the English import of wool was forty-six millions of pounds. In 1845, according to the subjoined authority, it was seventy-six millions of pounds. And this rapid increase took place, notwithstanding the vast extension in the woolen manufactures in other nations, particularly in Germany, France, Spain and Belgium. The extract given from Waterton's "Cyclopædia of Commerce," asserting the improbability of a much greater extension of the English woolen manufactures, "unless new markets shall be opened," may be true. But new markets are yet to spring up in Central and Northern Asia, and even in Northern Europe, which will, in the aggregate, require an increase of woolen manufactures which the boldest calculator now scarcely dreams of. For the reasons for this opinion, see page 123.—Whether England is to supply a greater or less portion of this increasing demand remains to be seen. If she continues as well prepared as she now is to compete with other manufacturing nations, doubtless she will contribute her full share to that supply.

It will also be seen, from the annexed paper, that what I predicted (see page 121) in relation to the prospective competition (from the year 1840) in wool-growing, between the densely populated countries of Western Europe and those in newer settled regions, where land is cheap and population comparatively sparse, has already come to pass. Spain, and even Germany, which in 1840 supplied England with nearly twenty-two million pounds of wool—nearly half of the whole import of the latter—have now been driven almost entirely out of the English market! But, says the *Sydney Herald*, Germany, Spain, etc., have renewed the contest in another form: they have extended their manufacturing operations, and now manufacture their own wool. Admit this: but if German wools cannot compete with others in the English market, which are brought from fifty times the distance, they cannot compete with them even in the German market, unless the latter are kept out by duties. The German manufacturer, then, in working up home wools, pays more for his raw material than the English manufacturer, and he cannot, therefore, compete with him in foreign markets, nor even in the home one, without a protective Tariff which would raise the price of the English to that of the German article.—Tariffs *materially* enhancing the cost of the necessaries of life will not long be tolerated by the consuming millions, in regions where civilization has penetrated.

It seems that Australia and Van Diemen's Land are the successful competitors which have driven Germany and Spain from the English wool market. The views set forth by me in Letter IX. in relation to the advantages of the former for wool-growing compared with those of Hungary, Southern Russia, North and South America, remain the same; indeed, a careful review of my positions has served to farther convince me of their correctness. The *character of the population*, and the better commercial regulations of Australia, have given her a present advantage over new rivals in the Old World; and America has not yet entered the field of competition. When the Anglo-Saxon of North America enters the lists with the Anglo-Saxon of Australia, natural advantages will not, as now, be

overbalanced by superior energy and enterprise. The Anglo-Australian will, to say the least of it, meet his full equal in these particulars. And, on the other hand, there is not a rational doubt that the *natural and other present advantages of all kinds are on the side of the Anglo-American.* The portion of North America included in the proper wool-growing zone is immensely greater than in Australia; our climate, all things considered—considering the occasional terrible drouths of Australia—is the best; our lands are cheaper, and will certainly average as good, including our whole Atlantic coast, and including only our territory between the Apalachians and the Rocky Mountains, our land will average by far the best; labor is not dearer among us; we are not a quarter as distant from the English markets; the wool from all parts of our immense interior, instead of being dragged long and expensive journeys in "bullock drays," is already whirled along by steam, or boated on canals or rivers to the seaboard, at a comparatively trifling expense. It would be difficult to name a particular, excepting in the two-cent duty, in which large portions of the United States have not the advantage over Australia for supplying the English wool market, and in other European markets we have perhaps *every* advantage over that Colony.

THE AUSTRALIAN WOOL TRADE*—[By *Wm. Westgarth*, Esq.]—The importance at present assumed by the Australian wool trade in the lists of British Commerce, demands some degree of attention in the history of an Australian settlement. I shall, therefore, devote the present chapter to a short account of this branch of Commerce, in its capacity both of an export from the Australian Colonies and an import into the British market.

In the year 1836, the quantity of wool exported from Sydney amounted to 3,700,000 lbs. weight. The proportion for the Port Philip district, included in this amount, could not, at so early a period of her existence, have exceeded 60,000 lbs. weight. Five years afterward the annual produce had attained to 1,578,000 lbs.; and the lapse of a similar period, bringing us down to the year 1846, exhibits the astonishing quantity of 7,400,000 lbs.† During this interval of ten years the quantity of wool exported from Sydney, exclusive of any from Australia Felix, had increased from three and a half millions to nearly twelve millions of pounds weight.

The importation of wool into the British market appears, indeed—like the rise of the Australian Colonies—to be but a business of yesterday, and one, among numerous other instances, of the wonderful extension of Modern Commerce. In 1820, the quantity imported was under ten millions of pounds weight; in 1845, it had risen to seventy-six millions. The proportion from the Australian Colonies in the former year was the one-hundredth part; it now forms nearly one-half of the whole importation‡; and at the steady and rapid ratio of the present increase of Australian wool, the lapse of a few years will exhibit a quantity far greater than the united total of the wool at present imported into Britain from every quarter of the world. The following Table exhibits the respective averages, in round numbers, for each period of five years from 1826 to 1845; the numbers representing millions of pounds weight:

Average of years.	Foreign Wool.	Colonial Wool.	Total
1826–30	25	2	27
1831–35	34	4	38
1836–40	44	10	54
1841–45	36	22	58
1846	34	30	64

This Table illustrates the extraordinary progress of the colonial production, three-fourths of which are derived from Australia and Van Diemen's Land.

The periodical public sales of colonial wool, which now occupy so important a position among the commercial occurrences of the British Capital, date their origin only so lately as the year 1817. The prices at that time, and for some subsequent period, were only from 2d. to 3d. per lb.; and it was not until twelve or fourteen years afterward that any important advance took place in the value of this commodity. The fine quality of the Australian wool

* From a new work in the press, on Port Philip.

† The wools occasionally sent from Port Philip by way of Sydney, and appearing in the Customs' returns as Sydney exports, are here allowed for. The season or year is taken as ending on the 10th October, as the usual date of 31st December falls in the midst of the wool shipments, and cannot fairly represent the quantities and ratio of progress of each year.

‡ In 1846, the relative quantities imported into Britain were, in round numbers, thirty-four millions of pounds of foreign wool and thirty millions of colonial. For the present year the colonial may be safely assumed at somewhat more than half the importation.

began soon after to attract notice, and in 1835 and 1836 to excite the attention even of foreign manufacturers. From very small beginnings the extent of the periodical auction sales gradually increased. An unprecedented number of 750 bales was announced for one series of sales in 1825; and for some years afterward 400 bales were considered to form a very extensive sale. But in July, 1835, 3,746 bales were brought forward, realizing for the better qualities the considerable rates of from 2s. 6d. to 3s. 8d. per pound; and at the sales of the same month in 1844, there were exposed no less than 31,358 bales.*

The celebrated wools of Australia are derived from two principal breeds of sheep, the Merino and the Saxon. The former is the finest in quality, but it may be doubted if an adequate price has been hitherto derived to compensate for the lighter weight of the fleece. In the Sydney district, attention was chiefly bestowed on the Merino; in Van Diemen's Land, on the Saxon; and the Port Philip district received a share of both, as the colonists from either locality transported their flocks to her pastures. This mixture of breeds was still farther increased by occasional crosses with the Leicester and South-Down. In fact, from the numbers of inexperienced persons who entered on the occupation of sheep farming in this new settlement, and, without any fixed principles, carried on a mere random system of breeding, the greater portion of the wool consists of every shade of quality that natural accidents could produce. The abundant pasturage of Port Philip appears also to affect the pure Merino wool of the Sydney district, which in the former locality acquires a more open appearance, loses somewhat of its fineness, and increases about a quarter or half a pound in the weight of the fleece. The average weight of the good qualities of Port Philip fleeces, after washing, is from 2½ to 2¾ lbs.; of the Sydney fleeces about 2¼ lbs. There has been for several years a desire to introduce a greater uniformity of quality in the fleeces of each particular grower, and on the whole an inclination to adhere to the production of the finer qualities of wool.

[Here follow details of the Australian method of washing and other preparations for shearing, which are omitted, as they conform in every important particular to the directions laid down in these Letters for those processes.]

The wool is now ready to be packed and dispatched to the port of shipment. Each fleece is cleared of the locks and clippings or other unseemly portions, and is usually tied with a piece of string, and tightly squeezed into bags containing about one hundred each, or from two hundred and fifty to three hundred pounds weight. The ponderous bullock dray is now yoked to its team of eight or a dozen oxen, and charged with an ample load of the golden fleece, is dispatched from the station on its annual and protracted mission to the port of shipment.

The wool on its arrival in town is now generally classed and re-packed at an establishment for that purpose, unless this process has already been competently performed at the station.—The classification distinguishes only the entire fleece; it is not attempted to proceed to a minuter distinction of qualities by breaking the fleeces. When intended for sale, the wool, on its arrival in town, is conveniently exhibited in the various bins of the sorting establishment, and its quality and condition are fairly ascertained. At the establishment of the Messrs. Bakewell, in Melbourne, the wool is assorted first into the two leading divisions of clothing and combing, and each of these descriptions is run out into five qualities, the fifth or lowest being the coarse Leicester breeds. Extra fine lots are classed by themselves; *super*-greasy, or kempy, or other defective fleeces, are also classed apart. The charge for sorting is ¼d. per pound. The usual charge for hand-washing is 1d. per pound on the weight returned, and for scouring 1d. to 1½d. per pound. The system of re-packing is also of use in exposing any wet or damp that the wool may have acquired on the way from the interior, in which condition it is in danger of heating and even of originating fire in the hold of a vessel during a lengthened voyage.

The shipping season for the Australian staple commences toward the end of October; but only a few solitary drays have succeeded in reaching town during that month. Considerable quantities have arrived by the end of November; and during the two succeeding months there is a continuous succession of vehicles pouring with their voluminous loads into the various ports of the district.† These arrivals begin to fall off in February; but during that and the two succeeding months considerable quantities continue to be shipped, including the later shorn fleeces of the young lambs. The shipment of other exports, which are comparatively of unimportant amount, terminates with that of the wool. A solitary vessel may linger till July or August, when the transactions of the season are finally closed.

The following from a late number of the *Sydney Herald* may be well appended to the above:

* This included a small quantity of foreign wool. The proportion from Australia and Van Diemen's Land on this occasion was 26,134 bales. The early sales were held at Garraway's, and continued there from 1817 to 1843, when the locality was transferred to the Hall of Commerce, where they still continue. The first bale at the first sale, from the novelty of the circumstance, realized 10s. 6d. per pound.

[Mark Lane Express, 7th, 14th, and 21st Oct. 1844.

† There are five shipping ports in Australia Felix; namely, Melbourne, or its port of Williamstown, Geelong, Portland, Belfast, and Port Albert, or Alberton, in Gipps's Land. The quantity for the present year (1847) may be estimated at about 28,000 bales, of which five-sixths are shipped at Williamstown and Geelong.

"Our two time-honored competitors in the production of fine wool, Spain and Germany, have been fairly beaten out of the field. The climate and pasturage of these colonies, and of the congenial settlement at the Cape of Good Hope, backed by the energies of their Anglo-Saxon race of flock-masters, have more than compensated for our greater distance from British markets. We have been enabled to supply a good article—in vast and ever-increasing quantities—and at prices which, notwithstanding the cost of carriage, have, through our facilities of production, left us a remunerating profit, but which our ancient rivals have found to be insufficient to replace prime cost.

"But although Spain and Germany have ceased to vie with us as sellers of the raw material in England, they have done so only to renew the contest in another form. They have enlarged their manufacturing operations. Since they can no longer sell their fleece at a profit, they have resolved on working it up in their own looms. To that extent, therefore, they will cease to import wrought woolen fabrics; and in so far as their imports were from Great Britain, there will be a corresponding decrease in the British consumption of our wools. The woolen cloths imported into those two countries from Great Britain, in the year 1841, amounted, in declared value, to £1,026,481 sterling: and if we add the quantities imported in the same year into Holland and Belgium, the amount would have been about a million and a half. We must therefore be cautious, as prudent men, not to allow our spirits to be too much exhilarated by the apparent victory we have gained over 'our hereditary enemies,' seeing that, though seemingly vanquished, they have but shifted their position and varied their tactics.

"A judicious writer says, in 1844: 'Of late years cottons have, from their cheapness, in a great degree superseded the lower qualities of cloths—a circumstance which, joined to the increasing rivalry of France, Germany and Belgium, *renders it improbable*, unless new markets shall be opened in China or elsewhere, *that much extension will in future be given to our manufacture of woolen cloths.*'*

"While, however, the Spanish and the German wool-growers have thus ceased (or are expected very shortly to cease) to compete with us as exporters to England, another competitor has sprung up in a new and quite unexpected quarter. In addition to corn, breadstuffs, rice, tobacco, cotton, sugar, and an endless catalogue of 'notions,' in which Brother Jonathan has hitherto prided himself as a mighty producer, he has now taken it into his head that he can breed sheep and export wool on a large scale. And it would seem that in England his whim has by no means been thought whimsical. For, say certain Liverpool brokers to him, under date of 3d September, 1846: 'The arrivals of wool from the United States last year, for the first time to any extent, *made quite a sensation in this country*, as it was generally considered that you required to import these qualities, and there was no knowledge that your growth of wool was of such importance. *We have seen it estimated at sixty-five million pounds*;† and from your vast (and to us almost incredible) means of production, we believe *it will cause a kind of revolution in the wool trade.*'

"Jonathan's own opinion of the matter is thus expressed through the medium of the New-Orleans *Commercial Times*: 'Wool can be grown as cheaply, and to as great advantage, in the cotton-growing States as in any part of the world. There is nothing in the climate to prevent it. If it may be found desirable to grow that of the finest grades, it can be done without fear of the animals becoming covered with hair in a few years.' He has evidently some misgivings, however, as to the policy of his attempting the finest grades, for he immediately subjoins, 'However, we are inclined to think that wool *of a coarser quality will be found most profitable*, mutton being also an object with us.'

"If the United States already produce four times the quantity of wool that we do, and if there is a reasonable chance of their producing it of a quality equal to ours, and at no greater cost, then have we indeed much to fear from their formidable rivalry. The vast extent of their territory, the almost illimitable resources of their soil and climate, the indomitable spirit of their citizens, combined with their proximity to the British market, will render their competition, if successful at all, successful in no ordinary degree.

"'Wool,' says another Liverpool correspondent, addressing an American, 'requires in its production *great attention in crossing the breed*, otherwise the quality degenerates very quickly. The maintenance of its fineness depends also very much on the nature of the pasturage on which the sheep graze. And we may remark that *your own samples are of a particularly good kind.*'"

Here is a word of encouragement for the Americans, with a word of caution for the Australians. Of the two requisites for the production and preservation of a superior staple, one, suitable pasturage, is bountifully supplied to the Australian grower by Nature, while the other depends upon his own industry and skill. In this, it is to be feared, he has scarcely been just to himself. He has possibly presumed too much upon the natural advantages of the fine sheep-sustaining country in which his capital is staked. It will be well if this note of warning from the land of Stars and Stripes shall rouse him to a more vigilant attention.

[Simmonds's Colonial Magazine.

* Waterton's Cyclopædia of Commerce, p. 672.

† The quantity of wool exported from New South Wales, including the district of Port Philip, in the year 1843, was 17,564,734 lbs.

CHAIRS OF AGRICULTURE.

CHAIRS OF COMMERCE PROPOSED, AND WHY NOT CHAIRS OF AGRICULTURE?

It is stated in De Bow's Commercial Review of the South-West—a work distinguished, it 's hard to say whether most for its originality, industry or ability—that the Mercantile Library Association of Charleston—O. P. Andrews, President—recommend a Chair of Commerce, to be connected with the Association. The Editor, with a judgment and feeling that do him honor, has long evinced his anxiety to have "*commercial education* introduced in all the colleges;" and adds, "It is now understood we are to have a Chair of Commerce in the new University at New-Orleans;" which shows the liberality and good sense of the Legislature. But, let us add, if provision is to be made in the charter of such Institutions for public instruction in the business of Commerce, the *handmaid*, why not also in Agriculture, the mistress? Do not the Plow and its productions lie at the bottom, and form the groundwork for the whole superstructure of industrial pursuits? Is not the earth the great machine, while the manufacturer only fashions its products, and Commerce does the business merely of transporting from place to place, and exchanging these products, in their rude or fashioned state? Of what value is the mill, or the ship, but as they save labor and allow more of it to be applied to the work of production—to the cultivation and employment of the great machine, mother Earth—which gives subsistence and improvement to all? And yet you shall see members of State Legislatures and of Congress, providing for all sorts of instruction, and protecting all sorts of Industry, and showering honors on all sorts of excellence, especially *military excellence*—but what do they do for Agriculture? Might not as much useful information (and by that we mean information that would tend to augment the sources of subsistence, and all the benefits of civilization), be disseminated from a Chair of Agriculture, as from a Chair of Commerce, or of Greek, or of Latin or Hebrew, in any of our Colleges? Yet no one seems to have the thought, or the courage, to demand such a thing, although all these charters are granted—all our educational institutions established—in fact, all the legislation of the country is enacted (speaking in reference to the authority enjoyed by the different classes) by those, in a very large proportion, over all others, who represent, or who are *elected* to represent, the *landed interest.*

Had we the honor of being a Member of an American Congress, or Legislature, on a motion being made to vote a medal, or a sword, or a vote of thanks to an officer for animal courage, or even skill combined with that in the work of manslaughter—for war is but another word for homicide, (sometimes justifiable,) or if it was proposed that any legislative body to which we belonged—representing the majesty and power of the people—should solicit and receive the high honor of being visited by a gentleman armed with sword and buckler, and covered with gorgeous and bloody trophies of war, we would offer an amendment to this effect: "Be it also enacted, that like rewards be bestowed and equal honors offered to whatever man in any State (naming him) should happen to have been, by competent and appropriate authority, pronounced the *most industrious and successful*

and practical farmer—most indomitable and skillful in the *use of the plow*—and if we had the honor to represent a portion of Massachusetts—where more than half a million of taxes are annually self-imposed for the education of every child in the State—we would especially insist that equal public honor should be voted, above all men, to a certain HORACE MANN* for his inestimable, yes, *inestimable* labors, as Secretary of the Board, in the *noble cause of education*—that great, most Christian and effective preventive of crime and of war—and if our reason should be demanded, we would demand in return—pray, gentlemen legislators, what is the end of any legislative action but to promote the public happiness? And we would ask, Can any nation—we will not say Christian—but can *any* nation that consults its true honor and glory and happiness, set a higher value, and bestow larger rewards on skill in human destruction, than on those who stand head and shoulders above their fellow men, in examples of invincible perseverance and skill in augmenting the products of the earth, and with them all the comforts and the means of Christian refinement and civilization—or larger than on those, who render immortal service to their kind by diffusing the seeds of godlike knowledge, and with them, virtue, and power, and peace—that best of all power, which gives men power over themselves, and power to be useful to their fellows?

Perfectly well do we know that in the present depraved state, not so much perhaps of the public sentiment, but of public men's false estimate of it, every motion to keep the Plow always above the sword, and even in advance of the ship and the loom, would be deemed Utopian and idle; and meet with little countenance from men, whose measure for patriotism is too often their measure for popularity. But we trust in God, for the sake of the plow, that better times are coming. We only need the influence of the Press to hasten them—and this is, unfortunately, at present allied to, and in too large a proportion supported by other if not rival industries. What we have a right to hope is, that the agricultural Press at least, will unite with, and go ahead of us in demanding less for war, and more hereafter for agricultural education. Even yet more do we rely on the growing influence of the *schoolmaster!* In the moral progress of the world, honors and patronage we are well aware are first bestowed on warriors. That has been, in fact, the characteristic of barbarism, in all ages and in all parts of the world. Next shoots ahead the trader or exchanger; manufacturers still holding a lower grade, and the cultivators of the soil, whether women or men, are considered mere serfs of the soil, attached to, and sometimes even yet in barbarous portions of Europe, sold along with it, like the trees that grow or the cattle that browse on it. It is only in the highest state of civilization that the producers, working and improving the great machine, rise in the public esteem and begin to learn their true consequence. From that time Agriculture and civilization advance together.

With such a man as HORACE MANN (whom we have not the honor nor the happiness of knowing personally) Secretary of the Board of Education in Massachusetts, in every State of the Union, we should have in process of time Normal institutes in them all. *Every child* in every State, between the age of eight and sixteen, would be ten months at school; 98 per cent. at least of coming generations would make useful and profitable, and worthy citizens; and our poor houses and jails and penitentiaries would be without inmates, and might be converted into schools and colleges. The cost of supporting one regiment would support a Normal school for training agricultural teachers in every State.

* This was in type long before Mr. Mann was nominated for Congress.

Too well we know that the advance of moral truths are slow, but thank God, with the light and power of the Press, we may hope they will be sure. If not, to what end has God endowed us with those faculties, which seem to be lifting us nearer and nearer to Himself? The punishment of death denounced against all who should teach any other philosophy than that of Aristotle, was not revoked until fifty years after that Philosophy was forgotten. It was fifty years after the death of Harvey, when the faculty of medicine in Paris admitted the circulation of the blood. When did the same faculty admit patatoes to be wholesome? One hundred years after it had been proved by experience, and when the decree which forbade the use of them had been revoked.

The Parliament issued a like decree against emetics, and against Brissot, a celebrated physician of the sixteenth century. Contrary to the common practice, he bled, for pleurisy, *in the side where the patient suffered most.* This new practice was denounced to Parliament by the old physicians. Brissot was pronounced infamous, and forbidden to bleed for the future on the side where the pleurisy was. The affair being reported to Charles V, he was going to issue a similar decree, but it happened at the instant that Charles III, Duke of Savoy, died of pleurisy after having been bled in the ancient manner.

The time will come, unless military power should too soon extend its cancerous influences ineradicably throughout the vital parts of our body politic, that a *portion at least* of the *many* millions now given to war, and warlike preparations, will in all countries, and especially in ours, be given to that best of all preventives of war—the *dissemination of knowledge ;* and generations to come will look back with shame and blush for that barbarous epoch in the history of their fathers, when *eighty per cent. of all public burdens were imposed in preparations for shedding human blood!* and that, too, by laws enacted by the Representatives of Agriculturists!

A truth, by being new, shocks public opinion; and hence, though at last it may be generally received, it is a long time before it can overcome the prejudices that oppose its early progress. Thus, few public men can be found courageous enough to go for the right, and leave the rest to Heaven.

Well we know, on the point of Congressional power, and pretension to the diffusion of Agricultural knowledge, that they do now exercise the power, and shab off the landed interest with a small appropriation for an annual collection and diffusion of *Patent-Office Reports,* which, we understand, and doubt not, will be a valuable collection of facts; but the craven spirit who is willing to receive this crumb from the public stores as the portion which the landed interest has a right to demand, out of the millions it contributes of the public burdens for the benefit of other classes, deserves to be placed, in the esteem of all well judging friends of Agriculture, on the footing of the starving dog that snaps at a bone, or the senseless kitten that is amused and satisfied at playing with the june-bug that buzzes at the end of a thread, held by a child!

No, no! our country is too distant and too powerful to be in any danger of invasion, and the best preservers of peace are *well-informed minds, in strong, well-fed bodies!* Let the landed interest therefore insist on those who pretend to represent them, drawing no money from their pockets except for the diffusion of useful knowledge, and the improvement of the great machine whose produce gives employment, comfort, life and subsistence to every other industry and employment. Let devotion to these measures be substituted for other mercenary party tests in measuring the merits of public men.

ITEMS FOR COUNTRY READERS,

IN RESPECT OF THE AGRICULTURAL HABITS, PRODUCTS AND RESOURCES OF VARIOUS COUNTRIES WITH WHICH THE UNITED STATES HAVE COMMERCIAL AND DIPLOMATIC RELATIONS; INTERSPERSED WITH REFLECTIONS ON DIVERS MATTERS AND THINGS.

MR. EDITOR: Though a practical farmer, I have no ambition to rank among those who insult my profession by insinuating that we who follow it for a livelihood have no business to turn over any leaves but leaves of cabbages or tobacco; nor with any sort of knowledge except the best distance to plant and the right time to sow. In contempt of such disparaging suggestions, I shall send you occasionally, if acceptable, notes of such things as may strike me when, at night and at other times of comparative leisure, a book or my pen may take the place of the hoe and the plow.

As, however, many things do not impress all minds in the same light, it will doubtless happen that some of these items may be esteemed neither useful nor entertaining. You remember the old nursery rhyme—

"Many birds of many kinds,
Many men of many minds."

My aim will be to occupy your pages with such facts and reflections only as may appear calculated to convey useful information, or fitted to gratify that natural curiosity which every gentleman farmer may be allowed to entertain in respect of the productions of foreign countries, particularly as to the articles which form the chief staples of his own.

And first, as to the term "*Gentleman Farmer*," at which it is so easy for every conceited coxcomb of the city, or ill-bred country bird, that would foul his own nest, to turn up his nose with an air of derision. Permit me to say, Mr. Editor, that we agree perfectly in the wish, if not the hope, that the day is coming when, however it may be among other classes, there shall be none other than *gentlemen among farmers!* And by that, what do we mean? Men, whether rich or poor, in velvet or linsey-woolsey, who, looking only to what is appropriate, regard industry as a duty, if only in the way of example; and whether in affluence or in rags, esteem personal honor, and cleanliness, and economy, as among the practical virtues of life; men seeking knowledge above all things, with a nice sense of decorum and self-respect in all situations, however humble, however exalted. In all this, Sir, is there anything incompatible with the condition, or beyond the reach of the real, working, hard-fisted, practical man? Yet, such is the true *gentleman farmer*, who, in moments of leisure turns to his book instead of his bottle, to enjoy in it, the fruit of the greatest of all human inventions—*types*. Thus characterized will be American agriculturists generally, in reasonable process of time, if you can only prevail with the *gentlemen of the Press*, even your own numerous and able colleagues of the agricultural press, to unite with you in perseveringly demanding the same proportionate expenditure for enlightening the husbandry of the country, that is now bestowed on other pursuits.

But to my notes. You may judge whether there be, in what follows, for example about the *Agriculture of Austria*, any more than a gentleman of natural and proper desire for information would be apt to ask of a returning Minister

from that country, Mr. JENIFER, for instance. He would tell you, if his observations agree with the most authentic modern writers and travelers, that the Austrian Empire occupies 258,000 English square miles of the surface of Europe—that is, 45,000 more than France, and 138,000 more than England, Ireland and Scotland. Yet, vast as that Empire is considered in Europe, it is altogether not quite so large as—

	Sq. miles.		Sq. miles.
New-York	36,000	Maryland	11,000
Pennsylvania	47,000	New-Jersey	6,851
Virginia	61,300	Delaware	2,120
Ohio	40,000		
North Carolina	45,000	Total	259,271

While the whole United States, before the annexation of undefined Texas, contained, according to the venerable Darby, two millions and fifty thousand square miles. The surface of the Austrian Empire is said to have the advantage of varied and extensive productive regions, yielding, or capable of growing what in Europe they call *corn*, (meaning what we Yankees call "*small grain*," as compared, we suppose, with the larger grain of *Indian corn*;) also rice, wine, oil, honey, wool, silk, hemp, flax, tobacco, madder, (which we would produce if Agriculturists were half as watchful of their own affairs as manufacturers,) and all the useful vegetables and delicious fruits; also iron, coal, salt, and other minerals and products in abundance; cattle, swine, horses and sheep. The Danube and other great rivers extend inland navigation to almost every part of the Empire. With all these advantages, and a population generally industrious and orderly, Austria is naturally capable of being one of the richest and most powerful States in the world. And yet, what advantage is here quoted that our own country does not possess in an equally eminent degree, with that of a *free Government* thrown into the bargain! But shall we have the wisdom and moderation to turn these advantages to the best account? The greatest blessings—even freedom of speech—of the press—of religion—of government—may become curses if used with licentiousness. Is not this nation already agitated, from year to year, almost exclusively with *struggles for power and patronage*, rather than with thoughts and plans for *higher education and improved Agriculture?* Nay, is not the public ear already alarmed with the rumbling sounds of political earthquakes in the South? as if that glorious region of sun and flowers were destined to be forever the scene of "throes and convulsions" of all sorts! On this subject of education—another word for virtue—we shall see, as we proceed from one country to another, how *we* compare with some of the reviled Governments of Europe, monarchical and despotic. But once more to my notes:

The *population* of Austria, in 1840, was 27,550,401, being throughout the empire 3,171 to the square mile. According to an obviously safe rule of calculation, discovered by that able and veteran statist, W. DARBY, laid down in his Geographical Dictionary, in 13 years our population will rise up to 29,107,304, and so exceed that of Austria at the present time.

"There are some very remarkable phenomena attending the increase of population in the United States. If we take 3,929,827, the amount by the census of 1790, and divide by three, and add the quotient to the dividend, we have the subjoined results:

		By the census.
1800	5,239,802	5,305,925
1810	6,986,402	7,280,314
1820	9,315,902	9,638,131
1830	12,420,269	12,856,407

"This method gives only 508,307 less in five operations than the actual returns of the respective enumerations; and, commencing with the amount for 1800, the final result yields only a deficiency of 296,650. This rule is evidently safe, applied to the whole, as it differs from actual enumerations by giving a less aggregate. Let us, therefore, assume the result, 16,560,359, as deduced, by dividing by 3, commencing with 3,929,827, and carry on the synthesis to 1890,

1850	22,080,478
1860	29,107,304
1870	38,809,739
1880	51,846,319
1890	69,128,425

"The ratio of increase for the whole mass, deduced from 3,929,827 in 1790, and 17,068,666 in 1840, comes out 4.34, and applied to 17,068,666, yields an aggregate of 74,149,986 at the fifth census from 1840. We may therefore, with full confidence, regard the conclusion safe that the intermediate numbers and final results will rather exceed the real enumera-tions."

The military establishment of Austria numbers 464,972. What an enormous burden on the industry of a people! For no matter what the *form* of tax, the *people* must pay for Army and Navy, though sometimes they have the meanness to devolve the whole burden on *their posterity!* And after all, dare we (I ask it not in a party or political sense, but in the name of *American Farmers*, who *have to foot the bills*), dare *we* reproach the Governments of Europe on account of their military establishments? These contiguous despotisms are compelled to keep up their vast armies and navies to defend themselves against each other. and all of them against their own people. But look at the United States! Far removed from all liability to invasion, with old women enough to beat it off with brickbats should it come, mark our servile imitation of those Governments in every form of their preference of the *military* over *civil* service! For the true and practical patriot in quiet civil life, however devoted and pure, small pay for the moment, and, in the way of encouragement and reward, a tenure of office liable to be at any moment dissolved and the incumbent to be whisked down the tide of ruin by the breath of partizans, rising and falling in thick succession—too many of them ignorant, corrupt and revengeful, with greedy followers eager for the promised "plunder," and deaf alike to the claims of patriotism and the appeals of innocence. These things directly concern the *American Farmer*, of whatever *party;* for what is property, what is a country, when its liberties are cloven down? All other classes are here to-day and gone to-morrow, comparatively. The agriculturist is the only man who must *stand his ground* and *rise or fall with his country!*

The Government of Austria sets to our own and others a good example in having frequent and accurate returns made of its population, and general statistics. Without such returns, how can legislators judiciously adjust and regulate the various interests of the State? Every State in this Union should provide, also, for a thorough survey, and periodical reports of its actual products and capabilities.

The total number of the *nobility* in the Austrian Empire has been estimated at 400,000, being one in every ninety inhabitants. What a dead weight here is, again, on the back of *agricultural industry*, when it is considered that these gentry are themselves exempt from taxation. Let American farmers beware how they permit privileged and parasitical classes to grow up, under the forms and shadow of our free Government, to eat into their substance, as the ox-warble (*Œstrus bovis*) eats into the back of the ox. The farmer should look upon every *idle man* with eyes of suspicion, whether he be *on* or *off* his farm; for, he may rely on it, his support *comes, at last, out of the ground!*

As to ELEMENTARY EDUCATION, provided by the Government, in respect of which the most lamentable and disgraceful delinquency is chargeable to most of our States, either in the plan or in the execution of our educational systems, Austria is far from being neglectful of this greatest national concern. In that Empire, below the Embs, according to the authority before me, out of every 100 children above the age of six, 98 are actually at school; above the Embs, 94; Tyrol, 97; Moravia, 94; Bohemia, 93; Styria, 81; Transylvania, 75; Lombardy, 53; Mil-

itary Frontiers, 49; Venice and Corinthia, 33; Dalmatia, 20; Galicia, 13; Seacoast and Istrica, only 12 out of 100. In 1840, says Darby, between the eleventh and twelfth part of the whole white population of the United States could not either read or write.

And what, demands some caviler, *has all this to do with Agriculture?* Can't a man plow as straight a furrow, and maul as many rails, though he may not be able to read or write? As a mere practical, or *money* question, then, into which some people are for resolving everything, let me quote you, Mr. Editor, a single passage from some judicious and high-spirited "REMARKS," attached to a printed Report of the proceedings of the last ANNUAL SCHOOL CONVENTION OF NEWCASTLE COUNTY," Delaware—placed in my hands by a self-made and most useful man of that county; one who, from being originally a brick-layer, to his honor be it noted, and *refused credit for a "husk-collar"* but a few years since, has in the mean time made a large, poor farm, now one of the most productive in the county, pay for itself, and exhibit to the whole State a model of intelligent, enterprising and vigorous management. I allude to Maj. JOHN JONES, of "Wheatland," Delaware. I know not by whom these "REMARKS" were written, but they do credit alike to the head and heart of the writer, whoever he was. As to the *pecuniary* advantage, then, of only learning to read and write, and the addition it gives to a man's productive capacity, and therefore to his usefulness and value as a member of society, it is stated in these Remarks:

"A few years ago, accurate examination was made in manufacturing establishments, upon railroads and other public works to ascertain whether the laborers and persons employed, who had received a common school education, had any advantage with respect to capacity and conduct in securing better wages, and leading to promotion from lower to higher stations, and increase of compensation. It was found to be the actual result, proved by ledgers and accounts, that laborers and persons having had benefit merely of common schools, possessed great advantages over those who had been destitute of this benefit—surpassing them in many respects, bettering their employment, and improving their condition. It was thus proved, practically, that the prospect of a person with a common school education, for livelihood, for good management, for success, for usefulness and respectability, is far better than that of a person without—more than two to one."

[We regret to be obliged to postpone the residue of our correspondent's remarks, as in them he gives a more practical view of the agricultural products of Austria, comparing them with our own, &c. The preceding has been a long time in type, as might be inferred from some of the facts. *Ed. Farm. Lib.*]

VARIOUS BREEDS OF COWS AND THEIR MILK.

GREEN CORN AND CORN MEAL AS FOOD FOR COWS—QUERY!

IN this Journal for last month, page 55, will be found some useful practical observations on the suhject of *Milk*—its weight and yield of butter—taken from the Boston Cultivator.

Among other dairy facts well established, and yet not always well considered in the selection of cows, experience proves that the milk of one cow will sometimes give nearly double as much as another; proving that for a *butter dairy*, the greatest milker may be far from being the most profitable cow. The value of the animal depends, therefore, on whether the cow-keeper's object is to sell milk or to sell butter. The milk-sellers in and near London, keep the large

Holderness cow that will, from brewer's grains, secrete immense quantities of thin milk—thin before the usual addition of water to "town milk," for town milk is as different from the *bona fide* milk we get in the country, as a town-bred lady is from one bred and educated in the country. If it be true, as some say, that town ladies are sometimes *painted*—so town milk is sometimes *chalked*—not by the farmer, but by the milk dealers in the city. Nice calculators make a vast difference in favor of selling milk, rather than convert it into butter.

Mr. Newhall, for instance, near Boston, prefers to sell his milk at his barn for three cents per quart, to getting thirty cents per pound for butter: nor is this to be wondered at, if it be true as stated in the article referred to, that it probably takes, on an average, about twelve quarts of milk to make a pound of butter, for, at three cents, the twelve quarts would produce one-sixth more in milk than in butter; but there remains the buttermilk for the table and the piggery, to be set off against the labor and trouble of converting the milk into butter. The richness of the milk and its yield of butter depend no doubt materially on the foodof the cows.

On the other hand, if, as is stated, seven quarts of the *Alderney's milk* will often, if not generally, produce a pound of butter, it would fetch thirty cents in butter against twenty-one cents in milk. We remember some twenty-five years ago to have had one Alderney cow in a herd of others, and the dairy-woman, an honest, observant Irish woman, who has gone since to the West, probably to breed lawyers and judges, and Members of Congress, begged us not, on any account, to sell *that* cow, as *her* milk would "*color* the butter" of all the rest.

It may be mentioned among the curious chronologies of Agriculture, that we sold a very superior heifer calf of that cow, to that noble "old Commodore" and gallant polished gentleman, Commodore Chauncey, for one hundred dollars. He was President of the New-York Agricultural Society at the time—but could never rise higher on the list of winners, according to the jeers of his friend Commodore Porter, than a premium for the "*second best sow!*"

It would be well if others followed the example of Mr. Colt in ascertaining agricultural *facts* with equal precision, of weight and measure.

It may be well here to mention, that in some recent most agreeable intercourse with New-England farmers, two facts were discernable, which it may be useful, on the evidence fo such men, to record: 1. An increasing use of green corn, either drilled or broadcast, as a most valuable resource in *soiling* cattle, and 2dly, An increasing persuasion that a *free* use of *corn meal*, in feeding milch cows has a tendency to exhaust, or materially impair, ultimately, their milking properties. It was said to have that effect on the famous Danvers or Oaks cow, who, by-the-by, be it remarked, *en passant*, never produced an uncommonly good milker. Col. Jaques is our authority, and where could one find a better in a day's ride? It shows that like does not *always* produce like.

Extract of Letter from R. L. COLT. PATERSON, May 22, 1848.

Dear Sir: You ask me for my opinion of the Alderney cows. I have six cows and two heifers that will come into milk in three or four weeks—three yearling heifers and four heifer calves—one bull and one bull-calf of pure breed. I think so well of them that I have just ordered two cows to be purchased for me in the Island of Jersey, of the best and purest breed without reference to price.

I give here the evening and morning milk of my cow Mary, an Alderney of five years; sixteen quarts in the twenty-four hours, weighing thirty-four pounds, equal to two pounds two ounces per one quart: the others were equally good.

My son's Ayrshire cows give milk that weighs 1 lb. 14½ oz. to the quart; and I have a fine native cow which gives milk that weighs 1 lb. 14½ oz. to the quart—and my Devons give milk that weighs 1 lb. 14 oz. to the quart. Ever truly yours, R. L. COLT.

It is said that the modern Alderneys are much improved in shape over what they were years ago. Mr. Stetson of the Astor House lately had one brought into him which *looked* very like a Short-Horn. White, with the Short-Horn head and horn, but with fine yellow skin and perhaps less breadth across the the pins than a thorough Durham, but looking very much one. If a *bona fide* Alderney, they have certainly been much ameliorated in shape since they were brought to this country, and even since Mr. Biddle's importation—now Mr. Colt's. But we always suspect that great changes in some characteristic points are effected at expense of corresponding changes in others.

Can an Alderney lose its ewe, or rather deer-like looking head and neck, and ragged hips, and take on the symmetrical outlines of the Short-Horn, and yet retain that peculiar rich yellow color in its milk? It may be—but *we have not seen the proof of it.*

Certain breeds are good for certrin objects, and had better be let alone. Unfortunately, however when imported and costly, they will degenerate in our countries, because there will never (or very rarely) be enough of them of the same breed but of different families to have recourse to, to maintain their excellence. Mr. George Patterson's herd of Devons is the only exception we know of.' It is time the Massachusetts Society was getting another bull from England, or quite as good if not better from Springfield, Maryland, if one is to be had there.

From De Bow's Commercial Review.

UNITED STATES IMPORTS, EXPORTS, TRADE, &c.

FROM the last able Report of Secretary Walker we make up the following most invaluable Tables:

IMPORTS AND EXPORTS IN 1846 AND 1847, TO JUNE 30.

1846.	Exclusive of Specie.	Specie.	Total.
Imports	$117,914,065	$3,777,732	$121,691,797
Foreign Exports	7,865,206	3,481,417	11,346,623
Excess of Imports	$110,048,859	$296,315	$110,345,174
1847.			
Imports	$122,424,349	$24,121,289	$146,545,638
Foreign Exports	6,166,039	1,845,119	8,011,158
Excess of Imports	$116,258,310	$22,276,170	$138,534,480
DOMESTIC EXPORTS.			
1846	$101,718,042	$423,851	$102,141,893
1847	150,574,844	62,620	150,637,464

COMMERCE OF THE UNITED STATES FROM 1790 TO 1828.

	*Imports.**		*Exports.*		
Years.	Total Imports.	Consumption in U. S.	Domestic Produce.	Foreign Mdse.	Total Exports.
1790	$23,000,000	$22,460,844	$19,666,000	$539,156	$20,205,156
1791	29,200,000	28,687,958	18,500,000	512,041	19,012,041
1792	31,500,000	29,745,902	19,000,000	1,753,099	20,735,098
1793	31,100,000	28,990,428	24,000,000	2,109,572	26,109,572
1794	34,600,000	28,073,767	26,500,000	6,526,233	33,026,233
1795	69,756,000	61,266,796	39,500,000	8,489,472	47,989,472
1796	81,436,164	55,136,164	40,764,097	26,300,000	67,064,097
1797	75,379,406	48,379,406	29,850,206	27,000,000	56,850,206
1798	68,551,700	35,551,700	28,527,097	33,000,000	61,527,097
1799	79,069,184	33,546,148	33,142,522	45,523,000	78,665,522
1800	91,252,768	52,121,891	31,840,903	39,130,877	70,971,780

* Exclusive of specie.

Years.	Total Imports.	Consumption in U. S.	Domestic Produce.	Foreign Mdse.	Total Exports
1801	111 363,511	64,720,790	47,473,204	46,642,721	94,115,925
1802	76,333,333	40,558.362	36,708,189	35,774,971	72,483.160
1803	64,666,666	51,072,594	42,205,961	13,594,072	55,800,033
1804	85 000,000	48,768,403	41,467,477	36,231,597	77,699 074
1805	120,600,000	67,420,981	42,387,002	53,179,019	95,566,021
1806	129,410,000	69,126,764	41,253.727	60,283,236	101,536,963
1807	138,500,000	78,856,442	48,699,592	59,643,558	108,343,150
1817	99,250,000	79,891.931	68,313,500	19,358,069	87,671,563
1818	121,750 000	102,323,304	73,854,437	19,426.696	93,281,139
1819	87,125 000	67,959.317	50,976.838	19,165,683	70,142,521
1820	74,450,000	56,441,971	51,683,640	18,008,029	69,691,669
1821	62,585,724	43,696,405	43,671,884	10,824.439	64.974,382
1822	83,241,541	68,395,673	49,874,079	11,476,022	72,160,281
1823	77,579,267	51,310,736	47,155,408	21,170,635	74.699 030
1824	80,549,007	53,846,567	50,649.500	18 322,605	75,986,657
1825	96,340,075	66,395,722	66,844.745	23,793,588	99,535,388
1826	84,974,477	57,652,577	52,449.855	20,440,834	77,595,322
1827	79,484,068	54,901,108	57,878,117	16,431,830	82,3:4,827
1828	88,509,824	66,975,505	49,976,632	14,044,578	72,264,686

COMMERCE, REVENUE AND POPULATION OF THE U. S. FROM 1790 TO 1847.

Years.	Imports of Specie.	Exports of Specie.*	Net Revenue.	Tonnage.	Population.
1790				478,377	3,921,326
1791			$ 4,399,473 09	502,146	
1792			3,443,070 85	564,457	
1793			4,255,306 56	520,764	
1794			4,801,065 28	628,618	
1795			5,588,461 26	747,965	
1796			6,567,987 94	831,899	
1797			7,549,649 65	876,913	
1798			7,106,061 93	898,328	
1799			6,610,449 31	939,409	
1800			9,080,932 73	972,492	5,318,762
1801			10,750,778 93	947,492	
1802			12,438,235 74	892.184	
1803			10,479,417 61	949,172	
1804			11,098,565 33	1,042,404	
1805			12,936,487 04	1,140,368	
1806			14,667,698 17	1,208,736	
1807			15,845,521 61	1,268,548	
1817			26,283,348 49	1,399,912	
1818			17,176,385 00	1,225,185	
1819			20,283,608 76	1,260,751	
1820			15,005,612 15	1,280,167	9,654,596
1821	$8,064,890	$10,478,059	13,004,447 15	1,298,958	
1822	3.369,846	10,810,180	17,589,761 94	1,324,699	
1823	5,097.896	6,372,987	19,088,438 44	1,336,566	
1824	8,379,835	7,014.552	17,878,325 71	1.389.163	
1825	6.150,765	8,797,055	20,098,718 45	1,423,112	
1826	6,880,966	4,704,533	23,341,231 77	1,534,191	
1827	8,151,130	8,014,880	19,712,283 29	1,620,608	
1828	7,489,741	8,243.47	623,205,523 64	1,741,392	
1829	7,403,612	4.924,020	22,681,965 91	1,260,798	
1830	8,155,864	2.178,773	21,922,391 39	1,191,776	12,866,520
1831	7,305,945	9,014.931	24,224,441 77	1,267,847	
1832	5,907,594	5,656,340	28.465,237 24	1,439.450	
1833	7,070.368	2,611,701	29,032,508 91	1,606,151	
1834	17.911,632	2.076,758	16,214,957 15	1,758.907	
1835	13,131,447	6,477,775	19,391,310 59	1.824,940	
1836	13,400.881	4,324.336	23,409,940 53	1,882,103	
1837	10.516,414	5.976,248	11.169,290 39	1,866,656	
1838	17,747,116	3,508,046	16,158,800 36	1.995,640	
1839	5,595,176	8,776,743	23,137,924 81	2,096,479	
1840	8,882,813	8,417,014	13,499,502 17	2.180,764	17,069,453
1841	4,988,633	10,034,332	14,487,216 74	2,130,744	
1842†	4,087,016	4,813,539	14,260,770 95	2,092,391	
1842‡	7,440,112	506,930	3,927,137 81	2,174,862	
1843§	14,880.223	1,013,861	7.046,843 91	2,158,603	
1844	5,830,429	5,454,214	26,183,570 94	2,280,095	
1845	4,070,242	8,606,494	27,528,112 70	2,417,002	
1846	3,777,732	3,905,268	26,712,667 87	2,562,085	
1847	24,121,289	1,907,739	23,747,864 66	2,839,046	

* Including American Coin. † To September 20th. ‡ To December 31st (3 months.)
§ January 1st to June 30th, (6 months.)

INDEX

TO THE MONTHLY JOURNAL OF AGRICULTURE.

VOL. III.

A

African Desert, Artesian wells in, 24.
—— sheep, 189.
Agriculture: an intellectual vocation, 361.
—— and the Press, 426.
—— instruction in, 251.
—— general neglect of, 429.
—— Practical, 49.
—— Scientific, 92.
—— improvement in, 88.
—— and Botany, 403.
—— and Chemistry, 291.
—— American, impediments to, 591.
—— in Scotland, 43.
—— on the Rappahannock, 61.
—— of the Blue Ridge, 99.
—— of Shenandoah Valley, 103.
—— of Mecklenburg, Va., 410.
—— of South Carolina, 193.
—— in England, 345.
—— in Belgium, 428.
—— English, its condition, 533.
—— and the Government, 534.
—— Facts the improvement of, 535.
—— not an exact science, 537.
—— subject to contingencies, 537.
—— Profits of in Corn and Wheat, 425.
—— Book Knowledge in, 426.
—— Steam applied to, 549.
—— Population employed in, 587-8.
—— Chronology and Curiosities of, 591-3.
Agricultural Education, 15, 43, 88, 357, 362-3.
Agricultural Botany, 115, 191, 233, 403.
Agricultural Societies, a hint to, 227.
—— —— the first in England, 220.
—— —— their Premiums considered, 534.
Agricultural Surveys, 229.
—— Exports of the U. S. 241.
—— advantages, &c. 243.
—— zeal displayed, 251.
—— Interest and the authorities, 294.
—— —— promoted, 294, 316.
—— Exhibition in Maryland, 295.
—— Papers, their duty and influence, 51, 58, 370, 372, 517.
—— Chemist, 315.
—— Readings, 362-3.
—— Dinner at Sir R. Peel's, 427.
—— Congress at Stockholm, 428.
—— Order of Merit in Prussia, 429.
—— Journals: see *Agricultural Papers*.
—— Implements in Delaware, 548.
—— Professorships, as well as of Commerce, 619
Agriculturists, number of, 478.
—— the practical character of, 426.
—— in Maryland, 473.
Agriculturists in New-England, 478.
—— prices delusive to, 155.
Air for the roots of plants, 440.
—— as used by Man, 237.
—— for the respiration of plants, 237.
Alderney cows, their yield of milk, &c. 626.
Alkalies, the, 70.
Alkaline carbonates, 71.
—— phosphates, 70.
Aloe, the Socotrine, 235.
Alpacas in the United States, 28.
America, deterioration of animals in, 354.
—— climate of, 418.
—— exportations from, 543.
American Wool, fine, 174.
—— Plows, 421.
—— Farmer, the practical, 426.
—— Cheese, 523.
—— Road-making, 524.
—— Agriculture, impediments to, 591.
Ammonia, salts of, 70.
Analyses of Straw and Grain, 70.
—— of the Urine of Swine, 71.
—— of Wheat, by Fourcroy and Vauquelin, 95
—— of the Ash of the Flax plant, 211.
—— Soil, products, &c. of Virginia, 411-16.
—— of Oats, Corn, Potatoes, 413.
—— of Tobacco, 413.
—— of Cotton, Soil, etc. 414.
—— of Farm-yard manure, 415.
—— of the Guanoes of Commerce, 422.
—— of Indian Corn, 412, 545, 548.
Animals, time for killing, 437.
Anne Arundel Co. Md. 372.
Apples for a Boston climate, 47.
—— the best varieties, 47.
—— in tilled land, 68.
—— pruning of, 521.
April, garden calendar for, 525.
Architecture, insect, 377.
Arkwright's first patent, 586.
—— his first mill, 586.
—— his subsequent efforts, 586.
Artificial Manures, 201.
Artesian wells in the Desert, 24.
Ashes, anthracite, for potatoes, 15.
—— of the flax plant, 211.
—— to augment the effect of manures, 538.
—— and when used alone, 538.
—— favorable to growth of trefoil, 538.
Austria, population of, 625.
Athletic schools in Germany, 35.
Ayrshire, use of lime in, 592.
Ayrshire cattle, 285, 287, 304.
—— Mr. Phinney on, 304.
—— the most improved breed, 286.

Ayrshire cattle, observations of Mr. Colman, 304.
—— their yield of milk, 287.
—— disposition to fatten, 287.
—— cost of, 289.
—— Mr. Colt on, 289.

B

Bacon, to insure good, 245-7.
Bakers of Paris, the, 6.
Baldwin, Mr. on Humus, 598.
Baltimore, markets in, 57.
—— growth and men of, 58.
Banks in New-England, 478.
—— in Maryland, 478.
Bark of trees, 406.
—— derivation of the word, 406.
Barley, best time to sow, 224.
—— mode of sowing, 224-5.
—— premium for, 517.
Barn-yard manure not good for the potato, 15.
Barometer, the, 91.
—— use to the farmer, 91.
—— indications of, 91.
Barrels, 92, 240.
Barrel-staves, machine for, 92.
Baths in the Sulphur Springs, 146.
Beans, analysis of, 70.
—— composition of the straw, 70.
—— Potash in, 94.
—— feeding horses on, 226.
—— Windsor, great crops of, 227.
—— premium for, 517.
Beech, potash in, 94.
Beef, rise in the price, 73.
Beehives of cork, 524.
Bees, etherizing, 416.
—— covering, with earth, 425.
Beeswax : see *Recipes*.
Beets, their effect on the soil, 515.
Beirne, Mr. on Virginia Agriculture, 163.
—— on Grazing, 163.
Belgium, Agriculture in, 428.
Betel-nut, its properties, 346.
Blue Ridge, Husbandry suited to, 99.
Blue-grass, 162.
Blood, circulation of 233.
Bolling, R. B. on Agricultural Machines, 461.
Book Society, a Farmers', 36.
—— new, noticed, 53.
—— Agricultural, 88.
—— Knowledge for Farmers, 106, 137, 426.
Booksellers in New-York, &c. 49.
Borer, the, in peach-trees, 402.
—— sulphur for, 402.
Boston, best apples for, 47.
—— the merchants of, 529.
—— see *Massachusetts*.
Botany, Agricultural, notice of, 191.
—— —— as a branch of Education, 254.
—— —— Lectures on, continued from vol. ii. 115, 233, 403.
Box-feeding live-stock, 424.
Brake, hemp and flax, 210.
Bread, its nutrition, 142.
—— from Iceland moss, 35.
Breeds of Cattle in Holstein, 33.
—— of Hogs, 247.
—— Crossing, 307.
—— of Sheep : see *Sheep Husbandry*.
Breeding, principles of, 255.
—— see *Cattle*.
Breeding-register, form of, 324.
Brick, manufacture of, 25.
Bridge, the Niagara Suspension, 492.
Brooks, Mr., on Roots, 514.
Buckwheat, the Dyer's—a new coloring matter, 422.
Bud, mode of its growth, 405.
—— number of, 407.
—— the luxuriance of trees, 407-8.
Buel, Judge, his maxim, 373.
Burning-clay land, 429.
—— benefit of, 429.
—— effect on green crops, 429.
Business transactions, 45.
Butter, average quantity of, 33.
—— from good stock, 33.
—— in Philadelphia, 57.
—— in winter, 519.
—— proportion of milk, 555.

C

Calves, rearing and feeding, 520.
—— treatment in Philadelphia, 57.
Capitalists, incorporations of, 37.
Carbon, importance of, 224.
Carbonates, alkaline, 71.
Carbonic acid and water, 254.
Carriage-wheels, greasing, 94.
Carts *vs.* wagons for farms, 430.
Carrots, advantages of, 515.
—— prices of, 474.
—— 32 tons an acre, 515.
—— premiums for, 517.
Catawba grape, the, 436.
—— introduction of, 437.
Caterpillar, the cabbage, 237, 379.
Cattle in Holland, 33.
—— sale of, in the United States, 93.
—— grazing them, 105, 365, 367.
—— in the South, 163-4.
—— Durham, 163.
—— Alderneys, 626.
—— Ayrshire, 285.
—— Devon, 424.
—— expense of, 163.
—— Salting them, 164, 228.
—— of improved breeds, 219, 286.
—— strange apathy toward them, 219.
—— Ayrshires considered superior, 286.
—— Breeding, 368.
—— Feeding, 423.
—— —— box-feeding, 424.
—— need shade and shelter, 540.
—— Jewish mode of slaughtering, 593.
—— see also the different Breeds, and *Cows*.
Cattle-shows, how reported, 218.
Cave in Page County, Virginia, 103.
Celery, mode of cultivating, 593.
Cellular tissue, 116.
Chairs of Agriculture, 619.
—— and of Commerce, 619.
Characeæ, aquatic plants, 234.
Characters compared to wheat, 231.
Charcoal-dust for potatoes, 15, 290.
Cheese, number of lbs. from good stock, 33.
—— a new kind, 93.
—— American trade in, 523.
—— Mr. Colman on, 524.
Chemical fact, interesting, 254.
Chemistry, School of, in Connecticut, 291.
—— connection of with Agriculture, 291.
Chemist, an Agricultural, 315.
—— his prescribed duties, 316.
Cheviot sheep, 187.
—— improved, 188.
Chickens, care of, 90.
Chilicothe, Ohio, cattle in, 93.
China, nightsoil in, 93.
—— a new dyeing plant from, 422.
Chinese measures, 409.
Choice of land, 302.
Christmas dishes of old, 245.
Chronology of Agriculture, 591.

Churrus, an extract from hemp, 301.
Cincinnatus at the plow, 10.
Civilization, its influence, 281.
Cisterns, building of, 41.
Clarke on sowing in 1781, 493.
Clay land, 429.
Climate and wools, 100.
—— of Germany, 129.
—— of England and America, 418.
—— and the growth of plants, 67.
—— and the culture of grains, 67.
—— Dr. Forry on, 82.
—— variations of, 84.
—— differences of, 283.
—— of Maryland, 477.
—— of Massachusetts, 477.
Clover, analysis of, 70.
—— Volunteer, a pest, 147.
—— restoring land by, 63.
Clubs, Agricultural, their utility, 354.
—— —— a word to, 36.
Coal in Illinois, 79.
—— and in part of Indiana, 79.
Coal-tar, uses of, 308.
Cobs, their value as feed, 190.
Cob-meal for export, 205.
Coins, foreign, value of, 409.
Coke, Mr., tribute to his memory, 341.
Coloring matter, a new, 422.
Colman, Mr., on Ayrshires, 304.
—— on Cheese, 524.
Colt, Mr., on the Potato, 15.
—— on Corn, 549.
—— on Alderney and Ayrshire cattle, 289, 626.
Columbus, a fat ox, 371.
Committees, educational, 312.
—— agricultural, 312.
—— their character and duties, 312.
—— Legislative, 312-13.
Competition in wool, 123.
Compost, marsh-mud, for the potato, 290.
Confervæ, slender aquatic plants, 233.
Congress, Agricultural, 428.
Conveyances from New-York, 54.
Cook, the Navigator, 362.
—— his parentage, &c. 362.
Cookery, effect of, 433.
—— curious facts in, 433.
—— see *Housewife's Department, Recipes*, &c.
Cork beehives, 524.
Corn for hens, 90.
—— and poudrette, 94.
—— quantity of water in, 205-8.
—— and oil-cake compared, 370.
—— and the yield of crops, 349.
—— hints to the growers of, 348.
—— preparing it for market, 349.
—— English estimation of, 371.
—— Mr. Williamson on, 371-2.
—— Analyses of, 412, 545, 548.
—— as Food for Stock, 423.
—— in England, 423, 543.
—— Meal, shipment of, 424.
—— —— as a fattener, 370.
—— —— in Great Britain, 424.
—— —— exported from America, 543.
—— —— cost, here and elsewhere, 424.
—— —— as dried by Stafford's Dryer, 425.
—— Profit of, to the farmer, 425.
—— and cloth, 486.
—— premiums for, 517.
—— 67 bushels to the acre, 517.
—— raised on a wager, 517.
—— Laws, the English, 541.
Corn-dryer, Stafford's, 190, 203-9.
Corn-cobs, value as feed, 190.
Correspondents, apology to, 192.
Cost of cultivating land, 152.
Cotswold sheep, 186.
—— Mr. Reybold's, 221.
Cottage-garden, seed for, 94.
Cotton at the South and elsewhere, 101.
—— benefited by marl, 156.
—— statement of the Trade, 239.
—— growth of, 240.
—— Analyses of, 414.
—— yarn, uses, &c. of, 414.
—— Insects infesting, 420.
—— and the Loom, 482.
—— transportation of, 483.
—— average production of, 484.
—— Manufactures, the, 585.
—— —— number of spindles employed, 585.
—— —— England's gain in, 585.
—— —— in the United States, 586.
Cotton factories in Georgia, 489.
—— —— No. of hands employed, 489.
Cotton-mills, 475.
—— —— prices of, 475.
Country readers, items for, 622.
Cows, treatment of in Holland, 33.
—— a profitable Durham, 35.
—— winter feeding of, 402.
—— whey for, 426.
—— cheap feeding of, 519.
—— white turnips for, 519.
—— various Breeds of, 625-7.
—— their milk, yield, &c. 625.
—— green corn and corn-meal as food for, 625-7.
Crops, grain, increase in value, 73.
—— average, in Scotland, 44.
—— in Maryland, 375.
—— and trees, their effect, 540.
—— effect of burnt clay on, 429.
—— of Rape, 434.
—— sale of, on the ground, 438.
—— Wheat, 433, 438: see also *Wheat*.
—— of Oats and Potatoes, 438.
—— see also the different Grains.
Crossing breeds, 307.
Cultivation of land: its cost, 152.
—— effect of climate, 67.
—— of Madder, 34.
—— of Flax, 42, 93, 211.
—— the Hop in France, 93.
—— of Grains, &c. in Spain, 126.
—— of Grass in Germany, 130.
—— of the Olive, 195-200.
—— of Tobacco, 297, 363.
—— of the Grape, 435.
—— of the Turnip, 514, 516.
—— of the Potato, 522.
—— of Wheat, 535.
—— of the Vine, 543.
—— of Celery, 593.
—— Sheep, Mr. Fleischmann on, 551.
Cultivator, a, described, 113.
Curculio on plum trees, 66.
Curiosities of Agriculture, 591-3.
Cutting up pork, 249.

D

Dairy husbandry, 29.
Dairies of Holstein, 29, 34.
Darlington, Dr., on Botany, 191.
Dearborn, General, and his labors, 284.
Depth of planting seed, 302.
Delaware, agricultural implements in, 548.
Delaware ox, the, 371.
De Tocqueville on American institutions, 475.
Devon cattle, 424.
—— feeding of, 424.
Diet, simplicity of, 358.
Difference in crushed and uncrushed food, 212.

Digestion of oil-cake, 213.
Dinner, agricultural, 427.
Diseases of Sheep, 80, 82.
—— of Horses, 121.
—— of the Potato, 11, 290, 291, 464-5, 590.
—— of Tobacco, 363.
Distemper in horses, 121.
Dogs, protection of sheep by, 588-9.
Dog-laws essential, 588.
—— —— in New-York, 589.
Donkey, longevity of, 440
Dorsett, W. N., on Tobacco Insects, 363.
Drainage, its effects, 73.
—— an interesting and important subject, 427.
—— Thorough, 429.
—— principles of, 439.
—— Drayton Manor, Agl. meeting at, 427.
Drill, Pennock's, 550.
—— a new, from England, 550.
Dryers for corn, 190, 203.
Durham cattle, 163.
—— cow 'Victoria' 35.
Dutch weights, 409.
Dyeing material, a new, 422.
Dwarf trees: see *Pollards*.

E

Education, what it has done, 43.
—— of the population of Scotland, 43.
—— Agricultural, signs in favor of, 88.
—— in its true sense, 357, 591.
—— defective: the wrongs of Agriculture, 25.
—— of the boy or ignorance of the man, 15.
—— Reform in, considered, 51.
—— how children are trained, 362
—— and teachers, 474-5.
—— in New-England, 475.
Educational committees, 312.
Eggs and poultry, 90, 359.
—— to have, all the year, 90.
—— Pone, how to make, 90.
Electric telegraphs in England, 24.
Elm, potash in, 94.
Emigrants, hints to, 425.
Emigration and its results, 78.
Endogenous plants, 403.
England, increased wheat crop of, 150.
—— her Agriculture, 345.
—— climate of, 418.
—— American improvements in, 421.
—— corn as food for stock in, 423.
—— oil-cake in, 423-4.
—— Farming Clubs in, 353.
—— Sheep in, 353.
—— her Poor, 107.
—— Rent of land in, 153.
—— the Turnip in, 514.
—— experiments on the Grape in, 543.
—— Imports into, from America, 543.
—— Science and Agriculture in, 592.
—— see *English, &c.*
English Government prices, 94.
—— standard of flour, 307.
—— weights and measures, 409.
—— wheat, measure of, 418.
—— and American plows, 421.
—— Agriculture, its condition, 533.
—— Corn-Laws, the, 541.
Entomology, importance of, 377.
—— Insects injurious to vegetation, 420.
Entomological Societies, 420.
Escurial sheep, 177.
Essay on the Advantages, &c. of Virginia, 410.
—— on the Condition of the Stallion, 214.
Etherizing bees, 416.
Ewes in lamb, effect of turnips on, 420.
Excrements, origin of, 20.
Exhibition of American implements in Eng. 421
Exogenous plants, 403.
Expense of a horse, 349.
Experiments in manures, 533.
—— on the leaves of trees, 540.
Exports of trans-Atlantic States, 123
—— of the United States, agricultural, 241.
—— of the United States, miscellaneous, 241.
—— from America to England, 543.
Extent of New-York, 241.

F

Facts the improvement of Agriculture, 535.
Farm, productive, 35.
—— yard manures, 201.
—— keeping it productive, 213.
Farmer, the advantages of, etc. 342.
—— need of a permanent policy for, 543.
—— use of the Barometer to, 91.
—— prices delusive to, 155.
—— how to make money, 153.
—— see also *Agriculturists*.
Farmers' Clubs, a word to, 36.
—— —— in England, 353.
—— Book Society, very desirable, 36.
Farming and its profits, 38.
—— utensils, use of, 62.
—— book knowledge in, 426.
—— Mr. Allston on, 426.
—— in America, 108, 354,372, 418, 421, 426, 583.
—— 'like one's father before him,' 545.
—— in Great Britain: see *England*.
—— see also *Agriculture, Grains, &c.*
Fat and muscle from one acre, 95.
Fattening property of salt, 369.
—— domestic animals, 370.
Feeding stock with oil-cake, 93.
—— Horses in Scotland, 223.
—— —— use of beans for, 226.
—— Sheep, different systems of, 353.
—— —— with grain, 399.
—— Cattle on corn-meal, 371.
—— Calves, 520.
—— regularity in, essential, 401.
—— Box and Shed feeding, 353, 423, 424, 432.
Fences of earth, not feasible, 79.
Fern, amount of potash in, 94.
Fertility of fields, 20.
—— action of manures to cause it, 20.
Fibre, woody, of plants, 117.
Flax, cultivation of, 42.
—— profit of, 42.
—— exhausts the soil; reasons, 93.
—— Brake, Mr. Anderson's, 209-11.
—— composition of the plant, 211.
—— how to manage, 211.
—— nitrogen in, 210.
—— without injury to the land, 211.
—— analysis of the ashes, 211.
—— manure for, 212.
—— premium for, 517.
Fleischmann, Mr. on German sheep culture, 551
Flies on horses, 87.
Floriculture profitable as amusing, 281.
—— see *Housewife's Department*.
Flour, cost of transportation, 155.
—— trade in, in the United States, 232.
—— English standard of, 307.
—— Vauquelin's analysis of, 411.
—— exported to England, 543.
Flower-clock of Linnæus, 524.
Flowers, hints to lovers of, 359.
—— evergreens in winter, 359.
Fodder, corn-cobs for, 190.
—— experiments on, 191.
—— green and dry, compared, 191.
—— Table of different kinds, 397.

Foddering, time of, 77.
Food, crushed and uncrushed, 212.
—— industry represented by, 483.
—— value of, 212.
—— of Cattle, salt in, 228.
—— of Sheep on the prairies, 310.
—— as fuel for animal heat, 593.
Forcing potatoes, 16.
Force of minute plants, 120.
Founder in horses, 164.
Fountain, the highest in the world, 276.
France, hop culture in, 93.
—— its olive region, 198.
—— wheat in, 540.
Frauds in wool-selling, 87.
—— in exhibiting sheep, 222.
Fredericksburg, Va. marl near, 62.
Free Trade, effects of, 542.
—— —— Mr. Cobden's advocacy of, 542.
French grape, the white, 73.
—— mode of preserving fruits, 282.
—— measures, 409.
Fruit-bearing powers of the grape-vine, 543.
Fruit-trees, potash for, 44.
—— —— grafting, &c., of, 579.
Fruit, crops of, on the Rhine, 438.
—— French method of preserving, 281-3.
—— seedling different from the parent, 359.
Fumitary, quantity of potash in, 94.
Funds of public institutions, 423.
—— should not be hoarded, 423.
Fungus, a, and the Potato Rot, 15.

G

Gain to the farmer and planter, 153, 486.
Garden, cottage, seed for, 94.
—— Calendar: see *Housewife's Department.*
Gardener, the, and water, 439.
Georgia, manufactures of, 489.
—— cotton factories in, 489.
Germany, athletic schools in, 35.
—— care of grass in, 129-30.
—— productive plains of, 128.
—— climate of, 129.
—— sheep culture in, 581.
—— land and labor in, 552.
Giant sainfoin, 114.
Gillespie, Prof., on Road-making, 524.
Girdling trees, 406.
Glass milk-pans, their utility, 33, 232.
Golenos oak, 407.
Gossiping of farmers, 45.
Government, English, price for provisions, 94.
—— remissness of, in care for Agriculture, 534.
—— policy of, 474.
Gowen, Mr. mistake corrected, 579.
Grain crops, increased value of, 73.
—— trade of the United States, 232.
—— feeding of, to sheep, 399.
—— see *Corn, Oats, Wheat, &c.*
Grain of wood, 405.
Grafting, process of, 579.
Grapes, new varieties of, 73.
—— and the manufacture of wine, 435.
—— culture of, in Ohio, 435.
—— heavy bunches; how grown, 440.
—— in city and country, 543.
—— every farmer should have them, 543.
—— quantity to one vine, 543.
—— best kinds of for open walls, 544.
Grape-vine, fruit-bearing powers of, 543.
Grasses, prairie, for sheep, 76.
—— —— feeding down while growing, 76.
—— culture of, in Germany, 130.
—— new species in Virginia, 147.
—— Lands, profitable, 153, 163.
—— Blue, natural to Virginia, 163
Grasses, Wild, their growth, &c. 310.
—— Italian rye, 429, 431.
Grazing cattle in the South, 105, 161, 163, 365.
—— advantages in the West, 156.
—— Mr. Beirne of Virginia on, 163.
—— Mr. Caperton on, 367.
Ground, sale of crops on the, 438.
Grove, H. D, his excellent flocks, 553.
Growth of Baltimore, 58.
—— of plants, different kinds, 403.
Guano, composition of, 21.
—— more than half soluble salts, 72.
—— Prof. Liebig's observations on, 21, 72.
—— comparative prices of, 228.
—— effect on crops and land, 351.
—— in Maryland 25 years ago, 421.
—— a powerful fertilizer, 421.
—— ships employed in conveying, 421.
—— analyses of, by Prof. Johnston, 422.
—— how much applied per acre, 422.
Gypsum and its effects, 65.
—— Prof. Liebig on, 71, 72.
—— as used in the South, 158.
—— effects on the soil, 160.

H

Habits should be formed early, 51.
Hall's brick-making machine, 25.
Hams, curing of, 248, 250
—— —— use of sugar for, 250.
—— —— different processes of, 295.
—— —— by packing in tight casks, 295.
—— —— by dry salting, &c. 295.
Hardy, Prof. J. W., on Virginia, 410.
Harvesting-machine, 92.
Hay, analysis of, 70.
Hedges, the Osage orange for, 554.
Hemp Husbandry, 209-11.
—— curing and preparations of, 210.
—— Brake for, Mr. Anderson's, 210.
—— nitrogen in, 210.
—— cultivated as a luxury in India, 377.
Henry, Prof., on Corn, 548.
Herbemont grape, the, 436.
Hill, Mr., of Maryland, visit to, 519.
Hire for Labor in the South, 102.
Hogs: see *Swine.*
Holland, cattle in, 33.
—— Dairy Husbandry of, 29.
—— Dairies of Holstein, 29, 31.
—— cow-houses in, 33.
Honey: see *Recipes.*
Hop, cultivation of, 93.
—— first raised in France, 93.
—— congenial to the South, 147.
Hornblower, or tobacco-fly, 297, 361.
—— see *Tobacco.*
Horse, items of benefit relating to, 94.
—— use and effect of salt, 94.
—— the Distemper in, 121.
—— Founder in, 164.
—— Essay on the Condition of, 217.
—— modes of keeping, 226.
—— winter-feeding in Scotland, 223.
—— use of beans for feeding, 226.
—— expense of, 349.
—— to save from fire, 48.
Horticulture: see *Housewife's Department.*
Horticultural Society, the Massachusetts, 281, 529
Horticultural zeal, 360.
Hospitality in Virginia, 65.
Hotels in various cities, 56.
Housing sheep, 177.
Housewife's Department—
—— —— her sphere and acquirements, 275-6.
—— —— a Tale: Mr. Duropus and Family, 277
—— —— the education of females neglected, 355

Housewife's Department—
—— —— what is the proper education, 356-7.
—— —— simplicity of diet, 358.
—— —— Eggs and Poultry, 359.
—— —— Hints to lovers of Flowers, 359.
—— —— seedling fruit, culture of, 359.
—— —— the Habits of Insects, 377.
—— —— study of Entomology, 377.
—— —— Potato Pudding, to make, 380.
—— —— to cure injuries to trees, 380.
—— —— rules to make, or destroy: see *Recipes*
—— —— the Wife, 380.
—— —— Garden Calendars, 466.
—— —— Cookery, curious facts in, 433.
—— —— Green-house and Flower Calendars, 468, 525.
—— —— a Tale: Mary Williams, 469.
—— —— the Farmer's Daughter, 471.
—— —— the flower-clock of Linnæus, 524.
—— —— the Bachelor's Complaint, 471.
—— —— a Tale: Catharine of Liverpool, 580-4
Humus, formation of, 598.
Husbandry, Dairy, 29.
—— of the Blue Ridge, Virginia, 99.
—— Sheep, in the United States, 68.
—— —— see *Sheep Husbandry*.
Hussey's reaping-machine, 550.
—— his mowing-machine, 550.

I

Iceland moss, bread from, 35.
Ignorance thinks itself the wiser, 43
Illinois and parts of Ia. a vast coal-basin, 79
Impediments to American Agriculture, 591.
Implements and their makers, 252, 586, 587.
—— improved kinds of, 421.
—— American, trial of, 421.
—— Report on, 548. 550.
Imports of trans-Atlantic Nations, 123.
Importation of animals, 221.
—— effect of, 221.
—— of a Massachusetts Society, 304.
—— by Mr. Cushing, 304.
—— of Cattle, 220.
Improvements, internal, 64.
Incorporations of capitalists, 37
Increase in value of grain, 73.
—— in England's Wheat crop, 150.
—— in her Cotton manufactures, 585.
India-rubber on railways, 426.
Indian Corn: see *Corn*.
Insects, habits of, 371, 377, 378-9.
—— architecture, interesting, 377.
—— infesting Tobacco, 297, 361.
—— Mr. Dorsett on, 363.
—— attacking the Turnip crop, 420.
—— how to escape their ravages, 320.
—— difference in manures to counteract, 420.
—— infesting Cotton, 420.
Inspection of commodities, 5, 7.
—— State, system of, 7.
—— local, when applied, 8.
Institute, American, the, 546, 547.
Institutions of practical Agriculture, 292, 293.
Instruction in Agriculture, 251.
—— see also *Agriculture, Education, &c.*
Invention, important, 203.
Inventors should be honored, 252.
Iowa, farming in, 425.
Ireland and her Manufactures, 100.
—— Dr. Kane on her Resources, 101.
—— and its Famine, 107.
Iron, cast, for milk-pans, 33.
Isabella grape, the, 436.
Italy, her facilities, 127.
Italian rye-grass, 429, 431, 433.

J

Jackson, Professor, on Corn, 547
Jeannel, M., a work for children by, 52.
Jewish mode of slaughtering cattle, 593.
Johnson, Professor, on Climate, 67.
Johnson, Charles, Professor, on Botany, 233.
—— Course of Lectures by: see *Botany*.
Johnston, Prof., analyses by: see *Tables*.
Jones, Major, of Del, on drill-sowing wheat, 535.
Journals, influence of, 58.
—— see also *Papers*.

K

Kane, Dr., on Ireland, 101.
Killing animals, 437.
King, Mitchel, notice of an Address by, 193
Knowledge, book, use of, 426.

L

Labor at the South, 107, 158.
—— protection to, 491.
—— Agricultural, 473, 474.
—— of the Trades, 474.
—— comparison of, 473-4.
Laborers, hire of, 102.
Land, price of, in Illinois, 35.
—— difference in the price of, 78, 79.
—— all under the plow in Scotland, 44.
—— Rental of, in Europe, 44.
—— Buying, 92.
—— profit of improving, 151.
—— cost of its cultivation, 152.
—— in grass, profitable, 153.
—— effect of Lime on, 157.
—— choice of, 302.
—— preparing it, 302.
—— in Maryland, 372.
—— Clay, burning of, 429.
—— produce of, 433.
—— in Germany, 552.
—— and in America, 552.
—— effect of shading it, 598.
Languedoc, the Olive in, 197.
Laws, tobacco inspection, 5.
Leaves, structure of, 235, 236, 238.
—— the breathing organs of plants, 235.
—— experimented upon, 540.
Leicester or Bakewell sheep, 180.
—— preferred for mutton, 180.
—— description of, 182.
Libraries of choice books recommended for Farmers' Clubs, 36.
Liebig, Professor, on Manures, 18, 69.
—— analysis of straws by, 70.
—— —— of the ashes of plants, 70.
—— —— of urine, 71.
—— on Guano, 72.
—— on Artificial Manures, 17, 69.
Lime for potatoes, 15, 28, 290.
—— in hot-beds, 16.
—— *vs.* the Potato Rot, 28.
—— phosphate of, 69.
—— in planting trees, 93.
—— how to use it, 94.
—— in Virginia, 104.
—— its action, 104.
—— its effect on land, 157.
—— importance of mixing with the soil, 159.
—— used without knowledge, 592.
—— and abused without reason, 592.
—— in Scotland, 592.
Lindley, Professor, on Manures, 202.
Linseed as food for stock, 212.
Liquid manure, 71.
—— —— tanks for, 554.
—— —— treatment and advantages of, 554-5.

Longevity of the donkey, 440.
Longworth, Mr, on Wines, 435.
Loom, the, and cotton, 482.
—— first introduction of, 587.
Lothian farm held on long leases, 43.
Lyford's Price Current, 348.

M

Machine, Harvesting, 92.
—— Barrel, 92.
—— Stafford's Corn-Dryer, 190, 303-4.
—— Hussey's Reaping and Mowing, 550.
—— Threshing, 551.
—— Agricultural, at the South, 461.
Madder, culture of, 34.
Magnesia, phosphate of, 69.
Management of potatoes, 16.
—— Farm, in the South: see *Maryland, Virginia, Southern States, etc.*
Manufactures, domestic, 102.
—— in the South, 489.
—— influence of, 476.
—— Hon. J. R. Poinsett on, 476.
Manufacture of Brick, 25.
—— of Cultivators, 113.
—— of Wool and Woolens, 102.
—— of Olive-oil, 199.
Manufactories, Northern, &c 100.
Malaga raisins, 434.
Manure, barn-yard, unsuitable for Potato, 15.
—— Artificial, Prof. Liebig on, 17, 69, 201, 594.
—— farm-yard, analyzed, 415.
—— effect of various kinds on wheat, 90, 94.
—— Liquid, use of, 71, 554.
—— why the best may be ineffectual, 73.
—— waste of, reprehended, 150.
—— of Sheep, 166.
—— artificial and farm-yard compared, 201.
—— Prof. Lindley on, 202.
—— for Flax, 212.
—— Road, 289.
—— Stable, for the Potato, 290.
—— in Maryland, 350.
—— hints on the use of, 353.
—— summering it, 340.
—— water should not fall on, 430.
—— kinds and care of, 90, 94, 431.
—— Experiments in, 533.
—— phosphate of potash as a, 539.
March, J. W., his crops of turnips, 516.
Markets in Philadelphia and Baltimore, 57.
—— Wool, prospects of, 74, 122.
Marketable commodities should be weighed, 419
Marl, use of in Virginia, 62.
—— in South Carolina, 156.
—— Mr. Witherspoon on, 156.
—— its effect on crops, &c. 156.
—— its cost, 156.
Marsh-mud compost for the Potato, 290.
Maryland, Tobacco Laws of, 5.
—— number of papers in, 25.
—— Farming in, 108.
—— agricultural exhibition in, 295.
—— an agricultural chemist in, 315.
—— lands, men and management of, 372.
—— prices of her Produce, 373.
—— crops in, 375.
—— the working classes of, 376.
—— Resources of, 473.
—— compared with Eastern States, 473-6.
—— agricultural fair in, 473.
—— number of Acres in, 477-8.
—— Climate of, 377.
—— Population of, 478.
—— Banks in, 478.
—— agriculturists in, 478.
Massachusetts, best Apples for, 47, 477.
Massachusetts, Horticul. Society of, 281, 529, 532.
—— cattle importations, 304.
—— extent and population of, 477-8.
—— the Merchants of, 529.
Maternal supervision, 53.
Measures, foreign, 409.
—— English wheat, 418.
—— American, 419.
Meat, salting, 294.
Mecklenburg, Virginia, Agriculture of, 410.
Merchants of Boston, the, 529.
Merino ram, 'King of Vermont,' 94.
—— Sheep, 165, 170, 176.
—— deception in exhibiting, 222.
Merit, agricultural, Order of, 429.
Mexicans, the, at the Great Lakes, 409.
Microscope, aid of the, 119.
—— examination of wool by, 173, 175.
Milk, average quantity of, 33.
—— of the Ayrshires, 287, 305-6.
—— quality of, 306.
—— proportion of to butter, 555.
Milk-pans, glass, 33, 232.
Mineral substances of food, 20.
—— —— found in the bones of Man, 20.
Miscellaneous Notes, 417.
Mississippi River, No. of Steamboats on, 200.
Missouri grape, the, 436.
Mistake corrected—Mr. Gowen of Pa, 579.
Money readily gained, 153.
Montgomery County lands—Guano, 351.
Montpelier, Virginia, account of, 97.
Moss, Iceland, bread from, 35.
Mould, vegetable: see *Humus.*
Mowing-machine, Hussey's, 461, 550.
Mutton: see *Sheep*
—— Leicester preferred, 180.

N

National Statistics, 60.
Negro, capacities of, 53, 57.
—— and the White compared, 53, 57.
—— remarks of Von Tschudi on, 54.
—— labor of the, 107, 158.
Netting for sheep-folds, 44, 45.
New England, sheep in, 168.
—— —— Banks of, 478.
—— —— Education in, 475.
—— —— De Tocqueville on, 475.
—— —— operative, the, 585.
New-Haven, School of Chemistry at, 291.
New-Jersey, condition of, in 1840, 52.
—— —— education in, 52.
Newmarket, anti-shade tree law in, 103.
New-York, booksellers in, 50.
—— —— printing offices in, 50.
—— —— and Virginia contrasted, 65, 242.
—— —— Wool trade of, 165.
—— —— first introduction of Sheep into, 168.
—— —— extent and produce of, 241.
—— —— Reflections on, 241-5.
—— —— Agricultural Society premiums, 517.
—— —— Dog-laws in, 589.
Niagara Suspension Bridge, 492.
Nightsoil in China, 93.
Nitrogen in hemp and flax, 210.
Notes, practical, 353.
—— miscellaneous, 417.
Nott's electric telegraph, 24.
Nurseries, tree, increasing, 68.
Nutrition of bread as now used, 142.
—— absorbed by plants, 234.

O

Oak, amount of potash in, 94.
Oats, analysis of, 412.
—— crops of, 438.

Oats, premiums for, 517.
Ohio, its hilly region, 75.
—— average of wheat in, 150.
Oil-cake, origin of feeding with, 93.
—— —— formerly used only as manure, 93.
—— —— and Indian-meal, 205, 370.
—— —— premium for an Essay on, 212.
—— —— manufacture of in England, 423.
—— —— expense of feeding with, 424.
—— —— cost of making, 424.
—— —— utensils for manufacturing, 424.
Oil, olive, production of, 197.
—— —— sale and use of, 198.
—— —— manufacture of, 199.
—— —— quantity estimated, 200.
Olive, cultivation of, 195-200.
—— tree and oil, 197.
—— land, in France, 198
—— cultivation in the United States, 195.
Onions, 800 bushels an acre, 515.
Orange, Osage, for hedges, 554.
Orchards, directions for setting out, &c, 88,89.
Order of Agriculture in Europe, 429.
Organic tissue of plants, 233.
—— existence: its philosophy, 403
Osage Orange for hedges, 554.
Owens, Messrs., of Maryland, 374.
Owens, J. Jr., letter from, 375-6.
Ox, states of his labor, 354.
Oxen at the South, 158.
—— and their value, 105.
—— feeding them fat, 371.
Oxfordshire sheep, 221, 222.

P

Page County, Va., its Resources, 102.
Pampas of South America, 85.
—— wool-growing on, 85.
Papers in Maryland and Virginia, 25.
—— Agricultural, their use, 26.
—— —— their duty, 51, 58.
Parents and their children, 21.
Paris, the bakers of, 6.
Parsnips for hogs, 202.
Patent-Office Report, 11, 551.
—— —— and the Potato Rot, 11.
—— —— Mr. Fleischmann on Wool, in, 551.
Patterson, Mr., of Maryland, 350.
—— —— his estate, 350.
Peas, analysis of, 70.
Pea-straw, analysis of, 70.
Pea-vine the best cattle range, 163.
Peach-trees, the borer in, 402.
Pears, preserving, 282.
Pear-tree, the Endicott, 284.
—— —— the Stuyvesant, 284.
Peel, Sir Robert. Agricultural Dinner of, 427.
Peg-roller, the, 430.
Pennock's revolving rake, 252.
—— drill, 550.
Pennsylvania in 1840, 52.
—— and her markets, 75.
—— employment of capital in, 475.
Periodicals, agricultural: see *Agriculture.*
Persia and its climate, 84.
Philadelphia, markets in, 57.
Phosphates, the, 69, 70.
—— earthy, 69
—— alkaline, 70.
—— of potash as manure, 539.
—— of soda for the same purpose, 539, 541.
Pie-plant: see *Rhubarb.*
Pitch-pine tree, the, 253.
—— —— danger of its extinction, 253.
—— —— the cause and remedy, 253.
—— —— destruction of by hogs, 253.
Plains of Germany, 128.
—— of the Po, 127.
—— great and productive, 127.
Plants, origin of their carbon and nitrogen, 22.
—— the constituents of, 115-121.
—— effect of climate on, 67-8.
—— cellular tissue of, 116.
—— spiral vessels and ducts of, 118.
—— sap of, 233, 236.
—— absorption by them, 234.
—— the roots of, 234.
—— a new variety of, 422.
—— increase of, 403.
—— minute, their force, 120.
—— see also *Botany.*
Planters, tobacco, 5.
—— gain to, 486.
—— the profits of, 483.
Planting trees in lime, 93.
—— and plant-beds, 302.
—— the Potato early, 522.
Plaster of Paris, cost and use of, 158, 160.
—— —— see *Gypsum.*
Plow, the, and young men, 10.
—— example of the Romans, 10.
—— and Science, 51.
—— American and English, 421.
—— Ransome's, 421.
—— monarchical honors to, 427-8.
Poetry: see *Housewife's Department.*
Poinsett, Hon. J. R. on Manufactures, 476.
—— and on Agriculture, 476.
Policy and action of Governments, 474.
Pollards or dwarf trees, 405.
Poor, the, of England and Ireland, 107.
—— of America, 107.
Poplar, amount of potash in, 94.
Population, increase of, 63.
—— in New-York and Virginia, 63-66.
—— decrease of in Virginia, 102.
—— agricultural, employed, 587-8.
Portuguese measures, 409.
Potash, phosphate of, as manure, 539.
Potato Rot and the Patent-Office Report, 11.
—— —— Mr. Colt on, 15.
—— —— Mr. Teschemacher on, 590.
—— —— another cause for, 11, 290.
—— —— atmospheric influence considered, 464
—— —— and Lime, 28.
—— —— a covering of Straw for, 579.
—— —— salt *vs.* barn-yard manure, 15, 290.
—— —— agricultural salt for, 591.
—— varieties from the seed, 16
—— run out in about 14 years, 16.
—— charcoal for, 290.
—— lime, and marsh-mud compost, 290.
—— Irish, analyzed, 413.
—— Sweet, or Carolina, 413.
—— early and deep planting for, 417.
—— Mr. Gowen on the, 417, 420, 579.
—— yield of, 417, 418.
—— the price of, 417.
—— English experience in, 418.
—— storing them, 418-19, 420.
—— crops of, 438.
—— and manufactures, 486.
—— observations on the, 522.
—— early planting of, 522.
—— crops from seedlings, 523.
—— premiums for, 517.
—— correction relating to Mr. Gowen, 579.
—— starch from diseased, injurious, 597.
Potash wash for fruit-trees, 44.
—— sulphate of, in all plants, 70.
—— quantity in trees and plants, 94.
Poudrette for corn, 94.
Poultry and eggs, 359.

Poults, their treatment, 90.
Prairies, growing wool on, 76.
Prairie-grasses, wild, 76.
—— —— their extirpation, 76.
—— settlements on the, 79.
—— as wool-producers, 309.
Prefaces, long, 48.
Pregnancy, periods of, in different animals, 95.
Premiums, the offer of, considered, 516, 534, 549.
—— of the N. Y. State Agricultural Society, 516.
—— for Flax, 517; for Beans, 517.
—— for Potatoes, 517.
—— for Oats and Ruta-Baga Turnips, 517.
—— evils in awarding, 549.
Preparation of the land, 302.
Press, the, its power, 25.
—— and Agricultnre, 426.
Prices of beef and grain, 73.
—— of land, 79.
—— of provisions in England, 94.
—— delusive to the farmer, 155.
—— of sheep, 222.
—— of carrots, 474.
—— of cotton goods, 475.
—— Current for the several months of the year 1847-8, 48, 96, 144, 192, 240, 296, 360, 416, 472, 528, 584.
Printing-offices, 49, 50.
—— Press, the, 49, 58.
Prince George's County, Md., 372.
Produce, increase of, 21.
—— 'dull sales' years ago, 373.
—— of the land, 431-3
Producers and consumers, 587-8.
—— —— see *Cotton and the Loom*.
Products of the soil of Virginia, 411.
Profits of farming, 425.
—— of improving land, 151.
—— of cultivating land, 152.
Properties developed by cooking, 433.
Prospects of the wool-market, 74.
Protection to labor, 491: see *Labor*.
—— of sheep by dogs, 588.
Pruning the apple, 521.

R

Racks for sheep, 384.
Railways, India-rubber on, 426.
—— Southern, Table of, 599.
—— distance and fare on, 599.
Raisin-seed, a white grape from, 73.
—— Malaga, how made, 434.
Rake, Pennock's revolving, 252.
Rams, use of, 381.
Rambler in Virginia, letters from, 49, 97, 145.
Randall, H. S, on Sheep Husbandry: see *Sheep Husbandry*.
Ransome, Mr., his plows, 421
Rape crops of, 434
Rappahannock, Agriculture of, 61.
Reading as a source of pleasure and profit, 426.
—— agricultural, 363.
Reaping-machine, Hussey's, 550.
—— —— price of, 550.
Reform in education, 51.
Report on Implements, 548, 550.
Resources of the South, 63.
—— of Virginia, 102.
Revolutionary hero, a, 55.
Reybold, Mr., and his sheep, 221.
Rhine, fruit crops on, 438.
Rhode Island and South Carolina, 489.
—— —— and Virginia compared, 587-8.
Rhubarb, and its use, 28. 217, 595.
Rice, as sowing life and death, 198.
—— in Germany, 302.
Roads, as made in America, 524.
Roads in Virginia, 64.
—— manure of, 289.
Roller, the peg, how made, 430.
Romans, the, and the plow, 10.
Roots of plants require air, 440.
Rotations at Springfield, Maryland, 350.
Ruffner's cave, Virginia, 103.
Russian measures, 409.
Ruta-baga as feed for cattle, 371.
—— —— premiums for, 517.
Rye-grass, Italian, 429, 431.

S

Sainfoin, giant, 114.
Sale of cattle, 93.
—— of crops on the ground, 438.
Salting cattle, 164, 228, 366, 368.
—— pork and other meat, 249, 294.
—— Mr Thomas on the use of, 250.
—— whether or not necessary, 228.
Salts of ammonia, 70.
—— in urine, Liebig on, 71.
—— and water, strength of, 254.
—— and the Potato Rot, 15, 290.
—— in preparation for wheat, 433.
Sap of plants, 233, 236.
Saxon sheep, 165, 176.
—— first importation of, 178.
Schools, free, 426.
—— athletic, in Germany, 35.
Science and the plow, 51.
—— what it is doing for Agriculture, 592.
Scientific Agriculture, 92.
—— —— see *Agriculture*.
Scotland. Agriculture in, 43.
—— average of crops in, 44.
—— all its land under the plow, 44.
—— rent of the land, 44.
—— winter feed for horses in, 223.
—— sale of crops in, 439.
—— lime in, 592.
Shade and shelter for cattle, 540.
Shading land, effect of, 598.
Shearing sheep, 328-31.
Sheep, Alpaca, in the United States, 28.
—— trade in, near Pittsburg, 66.
—— —— in the West, 66.
—— Number of in the United States, 68.
—— Foddering, 77.
—— prairie grasses for, 76.
—— open winters bad for, 78.
—— washing wool on their backs, 81.
—— a good Merino ram, 94.
—— their manure, effect, &c. of, 166.
—— adapted to Virginia, 164-5.
—— sale and letting of, 164.
—— Native, the, in the United States, 168.
—— house-feeding of, 166.
—— Merinoes and Saxons contrasted, 165.
—— Breeds of in the United States, 167
—— in New-Netherland, 168.
—— in New-England, 168.
—— Spanish Merino, 170.
—— Merino, 176.
—— Saxon, 165, 176.
—— Escurial, 177
—— Leicester or Bakewell, 180, 222.
—— South-Down, 182, 185.
—— Cotswold, 186, 221.
—— Cheviot, 187.
—— Oxfordshire, 222.
—— Broad-Tailed, 189.
—— in Germany, 177.—In Spain, 126.
—— in England, 353.
—— Importation of Saxons, 128.
—— Mr Fleischmann on, 551.
—— most profitable breeds, 255.

Sheep, Feeding of, 353, 399.
—— warmth for, 353.
—— shed-feeding, 432.
—— trough system of feeding, 353.
—— food of, on the prairies, 310.
—— Hoven in, remedy for, 354.
—— Stells for, 389-91.
—— winter management of, 381.
—— use of Rams, 381.
—— different styles of Racks, 384.
—— Troughs, varieties of, 387.
—— salt for, 402.
—— water for, its necessity, 402.
—— Prices of, 292-3.
—— Protection of, by dogs, 588.
—— Exhibition and sale of, 221.
—— see also *Sheep Husbandry.*
Sheep-folds, netting for, 44.
Sheep-dogs, protection of sheep by, 588.
Sheep Husbandry in the United States, 68.
Sheep Husbandry: a series of Letters by Col. H. S. Randall, concluded from Vol. II.—giving with great minuteness descriptions of Breeds, Treatment, &c. 74, 122, 167, 255, 270, 317, 381, 441, 494, 576, 600.
—— —— demand and supply of the Wool Market, 74.
—— —— Prospects of the Wool Market, 122.
—— —— Breeds of Sheep in the U S., 167.
—— —— most profitable breed for the South, 255.
—— —— Principles of Breeding, 270.
—— —— Summer Management of Sheep, 317.
—— —— Winter Management, 381-402.
—— —— Anatomy and Diseases of Sheep, 441.
—— —— Diseases: their Treatment, 494, 556.
—— —— List of Medicines employed, 576.
—— —— Sheep-Dogs, and Wool Dépôts, 600.
Shenandoah, Agriculture of, 103.
Short-Horn cattle, 220.
Seed, varieties of potatoes from, 16.
—— suited to a cottage-garden 94.
—— depth to be planted, 302.
Seeding, thick or thin, 535-6.
Seedling fruit, 359.
Shelter for animals necessary, 540.
Silica in all soils, 70.
Slater, Samuel, and the Cotton Manufacture, 585.
Smut in wheat, 463.
Smyrnian measures and weights, 309.
Societies, Agricultural, a hint for, 227.
—— —— their Premiums, 584,
—— Entomological, 420.
—— that should be founded, 420.
—— Book, for farmers, 36.
Soda, phosphate of, as manure, 539, 541.
Soil, exhaustion of, 21.
—— proper for tobacco, 302.
—— of Virginia, 410.
—— analyzed, 414.
—— how made productive, 429-34.
South, Resources of the, 61-3.
—— vines congenial to, 447.
—— manufactures in, 489.
—— compared with New-England, 489.
—— see also *Delaware, Maryland, Virginia.*
South America, wool-growing in, 85.
South Carolina, marl in, 156.
—— —— Agriculture of, 193.
—— —— capital and labor in, 489.
South-Down Sheep, 182.
Southern railroads, 599.
Southern States, their capacity for Wool-growing, 74: see *Sheep Husbandry.*
Sowing barley, 224-5.
—— tobacco, time for, 303.
—— experiments on the depth of, 493.
—— turnips, season for, 520.
Spain, Sheep in, 126.
—— grains, fruits, &c. in, 126.
Spindles, number of, in the United States, 585.
—— in France and in England, 685.
—— England's gain, 585.
Spiral vessels of plants, 118.
Spongioles of plants, 235.
Spring wheat, bearded, 593-4.
Springs, where generally found, 402.
Stable manure, 72.
—— —— for the potato, 290.
Stafford, Mr., on Corn-cobs, 190.
—— his Grain Dryer, 203.
—— illustrations of it, 206.
Stallion, Essay on the Condition of, 214.
Staples and lands, 372.
Starch from diseased potatoes, 597.
Statistics, National, &c., 60, 200.
—— see *Tables.*
Staves, machine for making, 92.
Steam and water-power, 101.
—— what is it doing for Agriculture, 549.
Steamboats on the Mississippi, 200.
Stells for feeding sheep, 389-91.
Stevenson, Mr., tribute to Mr. Coke by, 341.
—— extract from his Address, 344.
Stock, breeding, 368.
Stockholm, Agricultural Congress at, 428.
Stocking-frame, the Derby ribbed, 586.
Stone-lime, an incombustible wash, 434
Stratification of parts of trees, 404.
Straw for the Potato Rot, 579.
—— analysis of the different kinds, 70.
—— quantity increased by their seeding, 536.
Sugar, use of for hams, 295.
Sulphate of potash, 70.
Sulphur Springs of Virginia, 145, 148.
Sulphur to get rid of the borer, 402.
Summering manure, 340.
Surveys, agricultural, 229.
—— Secretary Johnson on, 231.
Swedish measures, 409.
Swine of heavy weight, 35.
—— breeds of, 245.
—— parsnips for, 202.
—— fat and feeding of, 247.
—— making the best hams, 248.
—— cutting up, 294.
—— salting, process of, 249.
—— destruction of pine trees by, 253.
—— urine of, analyzed, 71.
Sweetwater grape, 436.
Swiss emigrants, 437.
—— grapes, culture, &c. of, 437.

T

Tables, useful—
—— Constituents removed by straw, &c., 70.
—— showing various Temperatures, 82.
—— substances contained in Wheat, 94.
—— of the Periods of Pregnancy, 95.
—— Fat and Muscle per acre, 95.
—— Imports of England, 121.
—— Woolen and Worsted Manufactures, 124.
—— Imports of Wools in the U. S., 138.
—— The American Wool Trade, 138.
—— Value of Woolens for 25 years, 139.
—— Increase of population in the U. S, 141.
—— Gross Products of Corn and Wheat, 152.
—— Carbon in Plants, amount of, 224.
—— Expense of Feeding Horses, 227.
—— Prices of Feeding Materials, 28
—— Grain and Flour Trade of the U. S, 232.
—— Cotton Trade of the U. S., 239.
—— Statistics of Wheat, 244, 411.
—— —— Rye and Oats, 244.
—— —— Corn, Potatoes, Pease, 245.

Tables, useful—
—— Statistics of Barley, Buckwheat, Flax, 245.
—— —— Neat Cattle, Horses, Hogs, 245.
—— —— Butter and Cheese, 245.
—— —— Sheep, Wool, Fleeces, 245.
—— Duties on Wool and Cloths, 261.
—— Memoranda of Ayrshire milk, 305.
—— Wheat, result of a quarter of, 307.
—— Appropriations of land, 813.
—— Varieties and Amounts of feed, 395.
—— Fodders, their value, 397.
—— Reaumur's Exp'ts on Saxon Sheep, 398.
—— Value of Foreign Coins, Measures, &c., 409
—— of different capacities, 419
—— Weights of Produce in St. Louis, 419.
—— Guanoes in England, 421.
—— the Profits of Farming, 425.
—— of the Potato Rot, 464-5.
—— Agriculture of Maryland and Virginia, 478.
—— —— of Mass. and Rhode Island, 498.
—— their Landed Interest, 479.
—— Produce of Manufacturing Industry, 480.
—— New-England and Georgia, 489.
—— Rhode Island and the South, 490.
—— Calculation of Weights and Produce, 515.
—— Nutritive Matter per Acre, 518, 519.
—— Gross Produce per Acre, 518.
—— Amount of Cheese at tide-water, 523.
—— Exp'ts in Cultivation and Manures, 537-9.
—— Imports into the United Kingdom, 542.
Tales: see *Housewife's Department.*
Tar, coal, uses of, 308.
Tartine, rhubarb, 28.
Tax on laborers, 107, 473.
Teachers and education, 474-5.
Telegraph, electric, and sub-marine communication, 24.
Telegraph, magnetic, and Dr. Franklin, 55.
Tennessee and Manufactures, 489.
Territorial extent of parts of Europe and America compared, 61.
Teschemacher, on a Fungus in the Potato, 15.
Thaër's Principles of Agriculture, 159.
Thin seeding, success of, 536.
—— —— gives more weight of straw, 536.
Thistle, the, potash in, 94.
Thomas, Mr, on Pork, 250.
Thorough Draining, 429.
Threshing-machine, use, &c., of, 551.
Timber on the prairies, 80.
Time, value of, 45.
—— —— especially to the Farmer, 45.
Tinned copper milk-pans, 33.
Tissue, cellular, of plants, 116.
Tobacco Inspection Laws, 5.
—— difference in color and taste of, 7.
—— Planters, 5.
—— culture of, 297.
—— in the olden time, 300.
—— Insects infesting, 297, 361, 376.
—— —— Natural History of, 361-3.
—— —— Remedies for, 363.
—— proper soil for, 302.
—— in Germany, 302.
—— time of sowing, 303.
—— Analysis of, 413.
Toe-nippers for sheep, 327.
Traveling now, and years ago, 55.
Trees, fruit, wash for, 44.
—— *Planting of*, 121 —*Grafting of*, 579.
—— how many to an acre, 197.
—— the Olive, produce of, 197.
—— Apple, in tilled land, &c., 68, 521.
—— directions for setting out, 89.
—— lime in planting, 93.
—— in Virginia, 99.
—— a law against, in Virginia, 103.
Trees, cure for injuries to, 380.
—— Peach, the Borer in, 402.
—— ordinary Forest, how formed, 404.
—— explanation of the Knots in, 405.
—— the Cambium, or secretion of, 405.
—— Dwarf, or pollards, 405.
—— the practice of Girdling, 406.
—— and crops, 540.
—— extension of, 407.
—— experiments on the leaves of, 540.
—— age of, calculations, &c, 407.
—— —— cannot well be estimated, 407.
—— —— remarks of Bosc, 407.
—— ancient, on Indian mounds, 407.
—— substances found in, 408.
—— —— explanation of this, 408.
—— general treatment of, 522.
Trefoil, ashes favorable to, 538.
Trenching soil, 96.
Trial of American implements, 421.
Troughs for sheep, 387.
Truro, England, feeding cattle in, 423.
Tschudi, Von, remarks on the Negro, 54.
Turner, Prof, on Fruit Trees, 579.
Turnips, feeding with, 420.
—— effect of, on ewes in lamb, 420.
—— crop, the, 514.
—— 30 to 50 tons an acre, 515.
—— England's bread, 514.
—— and hay compared, 515.
—— 834 bushels to the acre, 516.
—— white, for cows, 519.
—— season for sowing, 520.

U

United States, Alpacas in, 28.
—— —— Number of Sheep in, 68.
—— —— Sheep Husbandry in, 68: see *Sheep Husbandry, &c.*
—— —— Breeds of Sheep in, 167.
—— —— average product of, 150.
—— —— Grain and Flour Trade of, 232.
—— —— Agricultural Exports of, 241.
Urine, salts in, 71.
—— analyzed by Liebig, 71.
Utensils, farming, 62.
—— for manufacturing oil-cake, 424.
Utility of drainage, 439.

V

Value, increased, of grain crops, 73.
—— loss in exchanges, 475.
Vanderdonk on Sheep in 1790, 168.
Veal in Philadelphia, 57.
Vegetable matters, decay of, 70.
—— life and its operations, 233.
Vegetation—the buds of trees, 407-8.
Vetches, potash in, 94.
Victoria, a profitable Durham cow, 35.
Vine, amount of potash in, 94.
—— the South congenial to, 147.
—— in wet borders, 439.
—— houses, illustrated, 440.
—— cultivation of, 543.
Virginia, education in, 52.
—— letters from, 49, 97, 145.
—— number of Papers in, 25.
—— use of Marl in, 62.
—— Internal Improvements in, 64.
—— her Population and Growth, 63, 64.
—— and New-York compared, 65 242.
—— Husbandry suited to, 99.
—— and her Industry, 102
—— Sulphur Springs of, 145.
—— new Grass in, 147.
—— Western, adapted to Sheep, 164.
—— her advantages and disadvantages, 343.

Virginia, grazing cattle in, 365.
—— general Agriculture of, 410-16.
—— Resources of, 473.
—— compared with other States, 473.
—— and Rhode Island compared, 587-8.

W

Wagons *vs.* Carts on a farm, 430.
Waiters, white and colored, 57.
Warmth for animals, 353.
Wash, incombustible, 434.
WASHINGTON, personal recollections of, 55.
—— efforts of, to ascertain the average product of the United States, 150.
Washing wool on the backs of sheep, 81.
—— —— this practice conducive to health, 81.
Water, the, in corn, 205, 208.
—— power, *vs* steam, 101.
—— and salt, power of, combined, 254.
—— and carbonic acid, 254.
—— should never fall on manure, 430.
—— and the gardener, 439.
Weather, rules for predicting, 91.
Weights, foreign, 409.
—— commodities should be sold by, 419.
—— of oxen, 371.
—— English and American, 418, 419.
West, the, Sheep-trade in, 66.
Wheat, analyses of, 70, 95, 411.
—— Manures for; their effect, 90, 91, 94.
—— Table of substances contained in, 94.
—— machine for Reaping, 92.
—— —— to clean it, 462.
—— product of, in Virginia, 105.
—— its properties, analyzed, 143.
—— crop of England increased, 150.
—— in England, statement of, 354.
—— Boussingault's analysis of, 411.
—— Flour, Vauquelin's analysis of, 411.
—— proportion of Bran and Four, 411.
—— crops on improved land, 429, 438.
—— —— of 100 bushels an acre, 440.
—— Salt in preparation for, 433.
—— Smut in, 462.
—— in France, 540.
Wheat crop before the Revolution, 518.
—— drill-sowing, 535.
—— to grow good crops, 535.
—— exported from America, 543.
—— Spring, bearded, culture, &c. of, 593-4.
Wheatland Institute, the, 292.
Whey for cows, 426.
White, the, and the Negro, 53.
—— contrasted with the Negro, 53, 57.
Wife, the, her sphere, 380.
—— see *Housewife's Department.*
Wilder, Marshall P.—sketch of his labors, 529-533
Williamson, Mr., his Mission to S. America, 53.
Williamson J. D, on Corn-meal, 371.
Wine in Ohio, 435.
Winters, open, bad for sheep, 78.
Witherspoon, J. D., on Marl, 156.
Wood, formation of, 404.
—— the grain of, 405.
—— growth of its fibre, 405, 408.
Woody fibre of plants, 117.
Wool-growing on the Prairies, 76, 309.
—— —— begun on the Pampas, 85.
—— washing, on the sheep's backs, 81.
—— frauds in selling, 87.
—— and woolen goods, 100.
—— surplus export of, to England, 136.
—— Trade of New-York, 165.
—— value, and growth of, 165, 166.
—— microscopic examinations of, 173.
—— American the finer, 174.
—— South-Down, illustrated, 183.
—— producers, the prairies as, 309.
—— prospects of the market for, 74, 122.
Working classes of Maryland, 376.
Worsted goods, manufacture of, 100.

Y

Yam, the, composition of, 413.
Yarn, cotton, for warps, 586.
—— first patent for this purpose, 586.

Z

Zeal, Agricultural, 251.
—— Horticultural, 360.

RECIPES.

Ants, red, to destroy, 380.

Batter-cakes, to make, 94.
Beef, keeping fresh, 493.
Beeswax, to prepare, 114.
Borer, to prevent its ravages, 402.
Buckwheat cakes, to make, 358.
—— —— still better, 360.

Cabbage caterpillar, to destroy, 237.
Candle-wicks, improved, 308.
Carriage-wheels, greasing, 94.
Chapped flesh, to remedy, 42.
Cheese, a new kind, 93.
Cream crackers, to make, 114.
Coffee, to have good, 280.
Curculio, to destroy, 66.

Egg-pone, to make, 94.
Ewes adopting strange lambs, 354.

Flies on horses, to prevent, 87.
Founder in horses, 164.
Fruit, preservation of, 283

Gapes in chickens, 375.

Hominy, lyed, very superior, 280.
Honey for chapped flesh, 42.
Horses, to save them from fire, 48.
—— Distemper in, to cure, 131.
—— to prevent flies teasing, 87.
—— to cure the Founder in, 164.
Hoven in animals, to cure, 354.

Johnny-cake, to make, 358.

Manuscripts, renovation of, 438.
May-bugs, how to prevent, 359.

Polishing composition, 380.
Potash wash for trees, 44.
Potato pudding, 380.

Rhubarb Tartine, a new dish, 28.

Sulphur for the borer, 402.

Toothache, cure for, 597.
Trees, to cure injuries to, 380.

Wash, incombustible, 434.
—— potash for fruit-trees, 44.
Wheels, composition for greasing, 94.